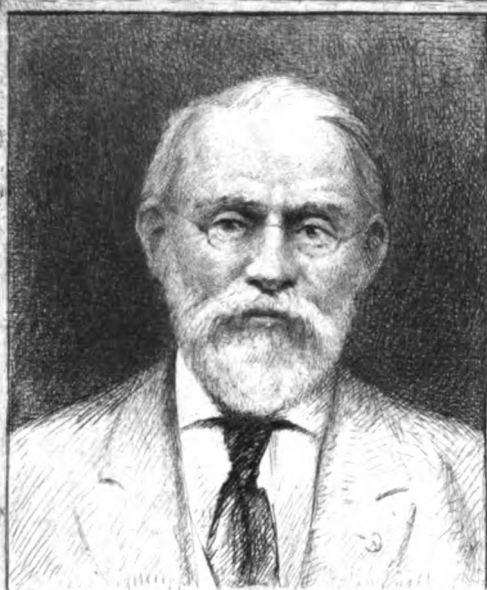

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Col., K.C.I.E., C.B. ...	Holdich, Sir T.H. ...	Late R. E.
Major ...	Holland-Pryor, P. ...	13th Bengal Lancers.
Lieut.-Genl., K.C.B. D.S.O.	Hunter, Sir A. ...	Comdg. Scottish Dist.
Lt.-Colonel ...	James, M. ...	S. C.
Lt.-Colonel ...	Jennings, R. H. ...	R. E.
Captain ...	Kaye, W. J. P. ...	30th Punjab Infantry.
Major ...	Kerrich, G. S. ...	1st Madras Lancers.
Colonel ...	King-Harman, M. J. ...	S. C.
Major ...	Knight, W. C. ...	4th Bengal Lancers
The Hon'ble, K.C.S.I.	La Touche, Sir J. J. D.	Lt.-Govr. N.W.P.&Oudh
Lt.-Colonel ...	Lawford, E. E. M. ...	1st Madras Infantry.
Captain ...	Lee, A. W. H. ...	16th Madras Infantry.
Lt.-Genl., C.B. ...	Little, H. A. ...	S. C.
Lt.-Colonel ...	Lowry, W. H. ...	28th Madras Infantry.
Major ...	McIntyre, H. D. ...	8th Madras Infantry.

LIFE MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Lt.-Colonel, C.I.E...	McKay, H. K. ...	I. M. S.
Major ...	McRobert, A. ...	Cawnpore Vol. Rifles.
Major, C.M.G. ...	Manifold, J. F. ...	R. A.
Major ...	Maxwell, A. G. ...	6th Bengal Cavalry.
Major ...	Mercer, H. F. ...	R. A.
Captain ...	Moore, F. L. ...	3rd Bengal Cavalry.
Colonel ...	Morley, F. ...	Retired.
Lieutenant ...	Morton, S. ...	24th Punjab Infantry.
Major, Nawab, Afsar-i-Jang, Afsar-uddula Bahadur, C.I.E.	Muhammed Ali Beg ...	3rd Lancers II. C.
Colonel, C.I.E. ...	Muir, C. W. ...	17th Bengal Lancers.
Captain ...	Muscroft, W. St. C. ...	S. and Trans. Officer.
Colonel ...	Nixon J. E. ...	A. Q. M. Genl., I.B.
Lieut.-Colonel the Hon'ble Esquire ...	Noel, E. ...	D. A. A. General.
Lt.-Colonel ...	Ogilvie, G. M. ...	C. S.
Lt.-Colonel ...	Olivier, H. D. ...	R.E., B.B & C.I. Ry. Vols.
Lt.-Colonel ...	Phayre, A. ...	3rd Bombay Cavalry.
Captain ...	Pilleau, A. L. ...	5th Bombay Infantry.
Colonel ...	Pollock, J. A. H. ...	1st Sikh Infantry.
Major ...	Prendergast, C. G. ...	4th Punjab Infantry.
Lt.-Colonel, p.s.o...	Presgrave, E. R. J. ...	10th Gurkha Rifles.
Major-General, C.B. C.S.I.	Protheroe, M. ...	Comdg. Burma Dist.

LIFE MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Captain ...	Ray, Mac C. R. E. ...	7th Rajput Infantry.
Lt.-Colonel ...	Renny, A. MacW. ...	7th Bengal Lancers.
Field Marshal, the Right Hon'ble, V.C., K.G., K.P., G.C.B., G.C.S.I., G.C.I.E.	Roberts, Earl ...	C-in-Chief, War Office.
Major ...	Roe, C. H. ...	R. E.
Colonel ...	Sawyer, H. A. ...	S. C.
Captain ...	Scharlieb, W. K. ...	5th Bengal Cavalry.
Captain ...	Seton, B. G. ...	I. M. S.
Lt.-Colonel ...	Smith, J. G. ...	S. and Trans. Dept.
Major-Genl., D.S.O.	Smith-Dorrien, H. L. ...	Adjutant Genl. in India.
Colonel ...	Stainforth, W. ...	Retired.
Major ...	Stewart, J. M. ...	2-5th Gurkha Rifles.
General, K. C. B. ...	Stewart, Sir R. C. ...	Indian Army.
Lt.-Colonel ...	Stockley, V. M. ...	16th Bengal Lancers.
Lieutenant ...	Thomson, H. ...	Cawnpore Vol. Rifles.
The Hon'ble, C.S.I.	Tupper, C. L. ...	Financial Commissioner, Punjab.
Major ...	Turner, G. H. ...	26th Baluch Infantry.
Captain ...	Vaughan, E. G. ...	S. and Trans. Officer.
Maj.-Genl., V.C., C.B.	Vousden, W. J. ...	I. G. of Cavalry in India
Captain ...	Walton W. C. ...	4th Bombay Rifles.
Captain ...	Whitehead, J. H. ...	33rd Burma Infantry.

LIFE MEMBERS—(*Contd.*)

Rank.		Name.		Corps, &c.
Major	...	Williams, G.	...	R. E.
Colonel	...	Willock, G. W.	...	Indian Army.
Colonel	...	Wilson, C. W. H.	...	Retired.
Lt.-Colonel	...	Worlledge, J. F.	...	6th Infantry H. C.
Lieutenant	...	Wright, C. H. B.	...	1st Infantry H. C.
Captain	...	Wynch, F. J. H.	...	37th Dogra Infantry.
Major	...	Yate, A. C.	...	29th Baluch Infantry.
The Hon'ble, K.C.S.I.		Young, Sir W. M.	...	Lt. Governor, Punjab.
Major	...	Younghusband, L. N.	...	19th Bengal Lancers.

ORDINARY MEMBERS.

Rank.	Name.	Corps, &c.
Br.-General ...	Abbott, F. ...	Comdg. at Nasirabad.
Colonel, C. B. ...	Abbott, H. A. ...	S. C.
Lt.-Col., D.S.O. ...	Abbott, H. E. S. ...	R. E.
Esquire ...	Acres, T. G. ...	Dist. Traffic Supdt., [N.W.Ry.]
Lieutenant ...	Adair, W. F. ...	30th Baluch Infantry.
Captain ...	Adam, F. L. ...	Scots Guards.
Col., V.C., C.B., A.D.C.	Adams, R. B. ...	Corps of Guides.
Major ...	Agnew, Q. G. K. ...	Royal Scots Fus.
The Hon'ble, M.A.	Aikman, R. S. ...	C. S.
Major ...	Aitken, A. E. ...	19th Bombay Infantry.
Lieutenant ...	Alexander, E. C. ...	1st Punjab Infantry.
Captain ...	Alexander, H. S. ..	Eurinpura Irregular Force
Major ...	Alexander, R. S. ...	7th Bengal Lancers.
Lt.-Colonel ...	Allen, A. J. W. ...	A. A. General.
Major ...	Allen, R. F. ...	R. E.
Captain ...	Allen, W. J. B. ...	R. A.
Lieutenant ...	Allgood, B. ...	Royal Irish Rifles.
Major ...	Anderson, C. C. ...	33rd Punjab Infantry.
Major ...	Anderson, J. H. A. ...	Manchester Regt.
Major ...	Angelo, F. W. P. ...	9th Bengal Lancers.
Captain, D.S.O. ...	Annesley, J. H. A. ...	3rd Dragoon Guards.

ORDINARY MEMBERS—(Contd.)

Rank.		Name.		Corps, &c.
Major	...	Alpin, P. J. H.	...	7th Bombay Pioneer.
Major	...	Archer, C.	...	Dy. Commissioner.
Captain	...	Armstrong, J. C.	...	Royal Inniskilling Fus.
Captain	...	Arnold, A. S.	...	1st Madras Lancers.
Maj.-General	...	Arnott, N.	...	R. E.
The Hon'ble, c.s.i.		Arundel, A. T.	...	Members of the Viceregal [Council.]
Lt.-Colonel	...	Aslett, W. C.	...	S. C.
Esquire	...	Atkinson, G. W. E.	...	Late Survey Dept.
Colonel, v.c.	...	Aylmer, F. J.	...	A. Q. M. General.
Captain	...	Badcock, A. J.	...	S. and Trans. Officer.
Lt.-Genl., c.B., c.s.i.		Badcock, A. R.	...	S. C.
Major	...	Baddeley, C. E.	...	R. E.
Maj.-Genl., c.B.	...	Baden-Powell, R. S. S.	...	South Africa.
Lt.-Colonel	...	Bailward, A. C.	...	R. A.
Captain	...	Baker, O. C.	...	Royal Irish Rifles.
Major, D.S.O.	...	Baldwin, G. M.	...	Corps of Guides.
Colonel	...	Balfe, E.	...	J. A. General in India.
Major	...	Balfour, J. H.	...	13th Bengal Lancers.
Captain	...	Balfour, P.	...	Highland L. I.
Major	...	Ballard, C. R.	...	Norfolk Regt.
Major	...	Banbury, W. E.	...	25th Madras Infantry.

ORDINARY MEMBERS —(Contd.)

Rank.	Name.	Corps, &c.
Lt.-Col., the Hon'ble	Baring, E. ...	Mily. Secy to H.E. Viceroy
Br. General ...	Barlow, J. A. ...	Dy. Adjutant General.
Captain ...	Barnard, A. B. ...	3rd Bn. Calcutta Vol. [Rifles.]
Col., C.M.G., D.S.O. ...	Barrow, A. F. ...	S. C.
Maj. Genl., K.C.B. .	Barrow, Sir E. G. ...	Secy. to Govt., M. Dept.
Captain ...	Barrow, G. de S. ...	4th Bengal Lancers.
Major ...	Barton, F. J. H. ...	Corps of Guides.
Captain ...	Basevi, W. H. F. ...	31st Burma Infantry.
Reverend ...	Bateson, J. H. ...	.....
Captain ...	Batten, F. G. ...	1st Madras Pioneers.
Captain ...	Battine, C. W. ...	15th Hussars.
Captain ..	Bayley, L. S. ...	R. A.
Lt.-Col., C.B., D.S.O.	Bayly, A. W. L. ...	A. A. General.
Major ...	Bazalgette, L. H. ...	2nd Suffolk Regiment.
Major ...	Beale, A. ...	5th Bombay Infantry.
Major ...	Beames, D. ...	19th Punjab Infantry.
Lt.-Colonel ...	Beatson, C. H. ...	I. M. S.
Colonel, C.B. ...	Beatson, S. B. ...	I. G. Impl., S. Troops.
Captain ...	Beatty, L. N. ...	Interpreter to H. E. the C-in-C.
Esquire ...	Becher, A. R. ...	P. W. D.
Captain ...	Becher, H. W. ...	West Riding Regiment.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Captain ...	Bell, J. B. ...	32nd Punjab Pioneers.
Lt.-Colonel, D.S.O.	Bell-Irving, A. ...	R. A.
Lt.-Colonel ...	Bellers, E. V, ...	Middlesex Regiment.
Maj.-Genl., C.B. ...	Bengough, H. M. ...	Retired.
Captain ...	Bentinck, R. J. ...	S. C.
The Hon'ble, C.I.E.	Beresford, J. S. ...	C. S.
Major ...	Beresford, W. R. H. ...	Royal Welsh Fus.
Major ...	Bethell, H. A. ...	R. A.
Major ...	Bethune, H. A. ...	Gordon Highlanders.
Major ...	Bewicke, H. B. N. ...	Late Manchester Regt.
Lt.-Colonel, C.B....	Bewicke-Copley, R.C.A.B.	King's Royal R. Corps.
Captain ...	Beynon, H. L. N. ...	R. A.
Major, D.S.O. ...	Beynon, W. G. L. ...	2-3rd Gurkha Rifles.
Major ...	Biddulph, S. F. ...	19th Bengal Lancers.
Major, D.S.O. ...	Biggs, H. V. ...	R. E.
Major ...	Bingley, A. H. ...	D. A. A. General.
Genl., K.C.I.E., C.B.	Bird, Sir G. C. ...	S. Corps.
Lt.-Colonel ...	Bird, W. J. B. ...	Contrl. of Mily. Accts.
Lt.-Colonel ...	Birdwood, W. S. ...	10th Bombay Infantry.
Lt.-General, C.B....	Biscoe, W. W. ...	S. Corps.
Colonel, K.C.I.E. ...	Bisset, Sir, W. S. S. ...	R. E.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Br.-General ...	Black, W. C. ...	Comdg. Deesa Dist.
Major ...	Blanc, C. F. ...	R. A.
Lt.-General, K.C.B.	Blood, Sir B. ...	Comdg. the Forces, Punjab.
Major ...	Blood, W. P. ...	2nd Royal Irish Fus.
Major ...	Blyth, H. R. ...	Royal Warwick. Regt.
Captain ...	Boddam, E. B. C. ...	2-5th Gurkha Rifles.
Major ...	Boileau, F. R. F. ...	R. E.
Major ...	Bond, F. G. ...	R. E.
Captain ...	Bond, R. F. G. ...	R. E.
Major ...	Bonham-Carter, H. ...	R. E.
Major, D.S.O. ...	Borradaile, H. B. ...	34th Punjab Pioneers.
Lt.-Colonel ...	Borton, A. C. ...	Late Somersetshire L. I.
Captain ...	Bosanquet, J. T. I. ...	2nd Border Regt.
Major ...	Boulnois, W. A. ...	R. A.
Lt.-Colonel ...	Bower, H. ...	1st Chinese Regt.
Major ...	Bowes, W. H. ...	D. A. A. General.
Colonel, C.S.I. ...	Brackenbury, M. C. ...	R. E.
Captain ...	Bradley, H. V. ...	2-2nd Gurkha Rifles.
Captain ...	Bradshaw, F. E. ...	Dy. Commissioner.
Lt.-Colonel ...	Bradshaw, L. J. E. ...	17th Bengal Infantry.
Esquire ...	Bramley, P. B. ...	Dist. Supdt. Police.

ORDINARY MEMBERS—(Contd.)

Rank.		Name.		Corps, &c.
Captain	...	Bredin, A.	...	12th Madras Infantry.
Major, D.S.O.	...	Bretherton, G. H.	...	S. and Trans. Officer.
Lieutenant	...	Breul F. A.	...	Gloucestershire Regt.
Colonel, C.B.	...	Broadbent, J. E.	...	R. E.
Lt.-Colonel	...	Bromfield, F. W.	...	Cheshire Regiment.
Major	...	Brooking, H. T.	...	D. A. A. General.
Major	...	Broughton, E. C.	...	York and L. Regt.
Captain	...	Brown, W. H.	...	25th Madras Infantry.
Colonel, D.S.O.	...	Browne, A. G. F.	...	2-4th Gurkha Rifles.
Major	...	Browne, R. A.	...	1st Border Regiment.
Lt.-Colonel	...	Brownlow, C. B.	...	4th Sikh Infantry.
Lieutenant	...	Bruce, J.	...	19th Bengal Lancers.
Lt.-Colonel	...	Brunker, J. M. S.	...	R. A.
Captain	...	Brunner, F. W.	...	R. E.
Captain	...	Brush, J. E. R.	...	Royal Irish Fus.
Major	...	Bryan, T. W. G.	...	R. A.
Captain	...	Buck, W. T.	...	2nd Durham L. I.
Lt.-Colonel	...	Buckland, P. A.	...	Supdt. Army Clothing
Colonel, C.B.	...	Bullock, G. M.	...	Late Devonshire Regt.
Lt.-Colonel	...	Bunbury, W. E.	...	28th Punjab Infantry.
Lieutenant	...	Bunbury, W. H.	...	R. E.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Lt.-Colonel ...	Burgess, F. F. R. ...	S. Corps.
Lt.-Colonel ...	Burn, A. E. P. ...	14th Sikhs.
Esquire ...	Burn, R. N. ...	Acett.-Genl. P. W. D.
Major ...	Burrowes, H. G. ...	R. A.
Captain ...	Burton, A. de S. ...	25th Bombay Rifles.
Captain ...	Burton, A. R. ...	1st Infantry H. C.
Colonel ...	Burton, F. C. ...	S. C.
Captain ...	Burton, R. G. ...	1st Infantry H. C.
Vety.-Captain ...	Butler, E. R. C. ...	A. V. D.
Major ...	Bythell, W. J. ...	R. E.
Major-Genl., c.B. ...	Caldecott, F. J. ...	Late R. A.
Lt.-Colonel ...	Callwell, A. H. ...	R. A.
Esquire ...	Campbell, A. ...	Asst. Supdt. Police.
Major ...	Campbell, C. F. ...	6th Bengal Cavalry.
Major ...	Campbell, C. P. ...	C. I. Horse.
Captain ...	Campbell, I. H. ...	7th Bengal Lancers.
Captain ...	Campbell, J. ...	A. and S. Highlander.
Br.-Genl., c.B. ...	Campbell, L. R. H. D. ...	Comdg. Bundelkhand [Dist.
Captain ...	Campbell, L. W. Y. ...	8th Madras Infantry.
Major, D.S.O. ...	Campbell, W. ...	Gordon Highlanders.
Captain ...	Campbell, W. N. ...	S. C.

ORDINARY MEMBERS —(Contd.)

Rank.		Name.		Corps, &c.
Lt.-Colonel	...	Candy, J. M.	...	14th Bombay Infantry.
Captain	...	Capper, A. S.	...	C. I. Horse.
Colonel	...	Capper, W. B.	...	A. A. General.
Major	...	Carbonaro, E.	...	S. Corps.
Major	...	Cardew, F. G.	...	Dy. Secy., M. D.
Esquire	...	Carey, A. D.	...	C. S.
Captain	...	Carleton, H. A.	...	33rd Burma Infantry.
Col., C.I.E.	...	Carnac, J. H. Rivett	...	Retired.
Major the Hon'ble		Carnegie, R. F.	...	Gordon Highlanders.
Major	...	Carpendale, P. M.	...	21st Punjab Infantry.
Major	...	Carpendale, W. M.	...	8th Bengal Lancers.
Major	...	Carruthers, R. A.	...	11th Bengal Lancers.
Captain	...	Carson, T.	...	Royal Irish Rifles.
Major	...	Carson, W. P.	...	Retired List.
Major	...	Carter, W. G.	...	Essex Regt.
Major	...	Carthew-Yorstoun, M. E.	...	4th Bombay Cavalry.
Major	...	Cartwright, C. M.	...	6th Bombay Cavalry.
Captain	...	Cattell, G. L.	...	25th Madras Infantry.
Major	...	Cavendish, C. C.	...	2nd Highland L. I.
Colonel, C.B.	...	Chamberlain, N. F. F. G.	...	S. Corps.
Lieutenant	...	Chamier, A. T.	...	R. E.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
General, v.c., c.B.	Channer, G. N. ...	S. C.
Lt.-Col. v.D. ...	Chanter, E. J. ...	2nd P. Vol. Rifles.
Lt.-Col., v.c. ...	Chase, W. St. L. ...	7th Bombay Pioneers.
Major ...	Chenevix-Trench, G. F. ...	Political Agent.
Captain ...	Chesney, N. E. ...	2-5th Gurkha Rifles.
Captain ...	Cheyne, A. Y. ...	15th Bengal Lancers.
Captain ...	Chitty, W. W. ...	19th Bombay Infantry.
Captain ...	Chrystie, G. ...	5th Punjab Cavalry.
Major ...	Churchill, A. B. N. ...	R.A.
Colonel ...	Clarke, H. ...	R. E.
Captain ...	Clay, C. H. ...	43rd Gurkha Rifles.
Captain ...	Clay, S. ...	43rd Gurkha Rifles.
Lieutenant ...	Clayton, E. R. ...	2nd Oxfordshire L. I.
Major-Genl. ...	Clifford, R. M. ...	S. Corps.
Major ...	Climo, V. C. ...	West India Regt.
Captain ...	Close, L. H. ...	R. E.
Lt.-Colonel ...	Clothier, R. F. ...	27th Madras Infantry.
Major ...	Coates, J. U. ...	R. A.
Colonel ...	Coates, G. H. B. ...	25th Punjab Infantry.
Esquire ...	Cockle, M.C. J. D. ...	.....
Lt.-Colonel ...	Cole, A. W. G. ...	R. Welsh Fusiliers.

ORDINARY MEMBERS--(Contd)

Rank.		Name.		Corps, &c.
Esquire	...	Cole, C. J.	...	Public Works Dept.
Major	...	Cole, E. H.	..	11th Bengal Lancers.
Lt.-Colonel	...	Cole, H. H.	...	Late R. E.
Major	...	Coleman, W. F.	...	Suffolk Regiment.
Captain, D.S.O.	...	Collen, E. H.	...	R. A.
Maj.-Genl., G.C.I.E., C.B.		Collen, Sir E. H. H.	...	S. C.
Captain	...	Collins, G. G.	...	U. Burma Vol. Rifles.
Major	...	Colomb, F. C.	...	42nd Gurkha Rifles.
Major	...	Combe, L.	...	1st Scottish Rifles.
Major	...	Comins, H.	...	1st Brahman Infantry.
Major	...	Compton, T. E.	...	Northamptonshire Regt.
Captain	...	Conner, R.	...	Gloucestershire Regt.
Major	...	Conran, W. L.	...	25th Bombay Infantry.
Major	...	Cook, H. R.	...	R. A.
Lt.-Colonel	...	Cook, W.	...	43rd Gurkha Rifles.
Maj.-General	...	Cooke, T. A.	...	.....
Lt.-Col., D.S.O.	...	Cookson, G. A.	...	16th Bengal Lancers.
Captain	...	Cooper, H. A.	...	1st Sikh Infantry.
Captain	...	Corbyn, E. C.	...	18th Bengal Lancers.
Major	...	Cordue, W. G. R.	...	R. E.
Lt.-Col., D.S.O.	...	Couchman, G. H. H.	...	Somersetshire L. I.

ORDINARY MEMBERS—(Contd.)

Rank.		Name.		Corps, &c.
Esquire	...	Coutts, E. G.	...	Public Works Dept.
Major	...	Cowley, J. W.	...	43rd Gurkha Rifles.
Major	...	Cowper, M.	...	10th Bengal Lancers.
Captain	...	Cox, F. W. H.	...	12th Burma Infantry.
Major	...	Cox, H. V.	...	21st Madras Pioneers.
Lieutenant	...	Cox, T. S.	...	16th Bengal Lancers.
Lt.-Colonel, c.B.	...	Coxhead, J. A.	...	R. A.
Br.-General	...	Craigie, J. H. S.	...	Comdg. Sind Dist.
Maj-Genl., v.c.	...	Creagh, O'M.	...	Comdg. China Field [Force.]
Captain	...	Crookshank, C. de W.	...	R. E.
Lieutenant	...	Crookshank, W. P.	...	1-1st Gurkha Rifles.
Captain	...	Crosthwaite, J. G.	...	Asst. Commissioner.
Major	...	Crowe, J. H. V.	...	R. A.
Major	...	Crowther, R. T.	...	23rd Punjab Pioneers.
Captain	...	Cruddas, H. W.	...	38th Dogra Infantry.
Captain	...	Cuffe, O. F. L. W.	...	U. Burma Vol. Rifles.
Captain	...	Cumberlege, C. J.	...	23rd Bombay Rifles.
Captain	...	Cunningham, A. H.	...	R. E.
Major	...	Cuppige, W. A.	...	48th Bengal Pioneers.
Major, D.S.O.	...	Cure, H. C.	...	1st Gloucestershire Regt
Colonel, c.B.	...	Currie, T.	...	N. Staffordshire Regt.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Major ...	Dallas, A. ...	16th Lancers.
Maj.-Genl., C.B. ..	Dalrymple, W. L. ...	Retired.
Major, C.I.E. ...	Daly, H. ...	Dy. Secy., Foreign Dept
Colonel ...	Dalton, J. C. ...	R. A.
Lieutenant ...	Daukes, C. T. ...	43rd Gurkha Rifles.
Captain ...	Daunt, W. D. ...	C. I. Horse.
Major ...	Davidson, C. ...	2nd Sikhs.
Captain ...	Davidson, S. R. ...	47th Sikhs.
Major ...	Davies, H. R. ...	Oxfordshire L. Infy.
Major ...	Davis, C. ...	1st Bengal Lancers.
Lt.-Colonel ...	Davison, K. S. ...	2nd Bengal Lancers.
Captain ...	Davy, R. M. M. ...	Gloucestershire Regt.
Esquire, C.B. ...	Dawkins, C. E. ...	.....
Lt.-Colonel ...	Dawkins, H. S. ...	R. A.
Captain ...	Dawson, E. ...	Rangoon Vol. Rifles.
Captain ...	Day, A. C. Fitz R. ...	1st Dorsetshire Regt.
Lt.-Colonel ...	Day, J. G. ...	R. E.
Colonel ...	DeBrath, E. ...	Dy. Secy., Mily. Dept.
Captain ...	deLabilliere, E. G. D. ...	22nd Punjab Infantry.
Capt., C.M.G., C.I.E.	DeLaessø, A. F. ...	Pol. Agent.
Captain, D.S.O. ...	DeLisle, H. De B. ...	Durham L. Infantry.

ORDINARY MEMBERS—(Contd.)

Rank.		Name.		Corps, &c.
Major	...	Denne, A. R.	...	2nd Madras Infantry.
Colonel	...	Des Vœux, C. H.	...	36th Sikhs.
Lt.-Colonel	...	Dewar, D. E.	...	R. A.
Major	...	Dick, A. R.	...	2nd Punjab Cavalry.
Captain	...	Dickson, J. H.	...	S. and Trans. Officer.
Lt.-Colonel	...	Dillon, G. F. H.	...	26th Punjab Infantry.
Lieutenant	...	Dixon, C. S.	...	Royal Irish Rifles.
Major	...	Dixon, P. E.	...	R. E.
Major	...	Dobbin, W. J. K.	...	1st Sikh Infantry.
Esquire	...	Donaldson, P.	...	Presdt. Simla Mplty.
Captain	...	Donlea, T.	...	Retired List.
Captain	...	Donnan, W.	...	S. C.
Major-Genl., K.C.B. D.S.O.		Dorward, Sir A. R. F.	...	R. E.
Vice-Admiral	...	Douglas, A. C.	...	R. N.
Major	...	Douglas, J. A.	...	2nd Beugal Lancers.
Captain	...	Douglas, W. B.	...	8th Rajput Infantry.
Captain	...	Dowding, H. H. H.	...	2nd Essex Regiment.
Major	...	Dowell, G. C.	...	R. A.
Captain	...	Drummond, E. J.	...	S. C.
Lt.-Col., C.I.E.	...	Drummond, F. H. R.	...	C. I. Horse.
Lieutenant	...	Duckett, J. S.	...	9th Lancers.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Captain ...	Dudgeon, F. A. ...	D. A. A. General.
Colonel, C.B., C.I.E.	Daff, B. ...	D. A. General.
Captain ...	Duff, G. M. ...	R. E. ...
Major ...	Duhan, W. W. T. ...	R. A. ...
Lt.-Colonel ...	duMoulin, L. E. ...	Royal Sussex Regt.
Lt.-Colonel, M.D., ...	Duncan, A. ...	I. M. S.
Major, M.B. ...	Duncan, G. ...	I. M. S.
Captain ...	Duncan, S. ...	Late Gloucestershire Regt
Captain ...	Dunolly, K. J. G. ...	5th Madras Infantry.
Major ...	Dunsterville, K. S. ...	R. A.
Colonel ...	Duperier, H. W. ...	R. E.
K.C.S.I., K.C.I.E. ...	Durand, Sir H. M. ...	C. S.
Colonel ...	Duthy, A. E. ...	R. A.
Br.-Genl., C.B. ...	Dyce, G. H. C. ...	D. A. General.
Major ...	Dyer, A. E. ...	U. Burma Vol. Rifles.
Captain ...	Dyer, R. E. H. ...	29th Punjab Infantry.
Major ...	Eardley-Wilmot, I. ...	18th Bengal Lancers.
Major ...	Earle, F. A. ...	Royal War. Regt.
Captain, D.S.O. ...	East, L. W. P. ...	R. A.
Captain ...	Eccles, C. J. ...	16th Lancers.
Captain ...	Edmiston, W. L. ...	Nilgiri Vol. Rifles.

ORDINARY MEMBERS--(Contd.)

Rank.	Name.	Corps, &c.
Major, D.S.O. ...	Edwards, F. J. M. ...	3rd Bombay Cavalry.
Major, D.S.O. ...	Edwards, J. B. ...	C. I. Horse.
Major-Genl., C. B., D.S.O., A.-D.-C.	Egerton, C. C. ...	Comdg. Punjab Frontier [Force.
Captain ...	Egerton, C. P. ...	Dy. Commissioner.
The Hon'ble Major- Genl., K.C.B.	Elles, Sir E. R. ...	Mily. Member of Viceregal Council.
Major-Genl., C. B., D.S.O.	Elliot, E. L. ...	S. C.
Captain ...	Eustace, A. H. ...	2nd Sikhs.
Lt.-General, C.B...	Evans, H. M. ...	S. C.
Lt.-Colonel, D.S.O.	Evatt, J. T. ...	2-39th Garhwal Rifles.
Captain ...	Everett, H. J. ...	Somersetshire L. I.
Colonel, C.M.G. ...	Exham, R. ...	R. A. M. C.
Captain ...	Fagan, H. R. ...	1st Punjab Infantry.
Captain ...	Fagan, L. E. ...	6th Madras Infantry.
Lt.-Colonel ...	Faithfull, H. T. ...	S. C.
Br.-General ...	Fancourt, St. J. M. ...	S. C.
Captain ...	Fane, V. B. ...	1st Punjab Cavalry.
Esqr., C.S.I. ...	Fanshawe, A. U. ...	D.G. Post Office in India
Lt.-Colonel ...	Fasken, C. G. M. ...	2nd Sikhs.
Major ...	Fasken, W. H. ...	10th Bengal Lancers.
Major ...	Faulkner, A. A. M. M....	2nd Bombay Grenadiers
Major ...	Fayrer, J. O. S. ...	1-5th Gurkha Rifles.

ORDINARY MEMBERS—(Contd.)

Rank.		Name.		Corps, &c.
Major	...	Fegen, M. F.	...	R. A.
Major	..	Fell, R. B.	...	Scottish Rifles.
Major, D.S.O.	...	Fendall, C. P.	...	R. A.
Lt.-Colonel	...	Fenton, A. B.	...	A. A. General.
Captain	...	Fergusson, A. C.	...	R. A.
Captain	...	Fergusson, H. C.	...	H. L. Infantry.
Lt.-Col., D.S.O.	...	Ferrier, J. A.	...	R. E.
Captain	...	Finch, C.	...	1st Bengal Lancers.
Captain	...	Finch, E. H. F.	...	Late E. Lancashire Regt.
Major	...	Fink, G. H.	...	I. M. S.
Esqr., C.S.I.	...	Finlay, J. F.	...	Secy., Finance Dept.
Lt.-Colonel	...	Finnis, H.	...	R. E.
Captain	...	Firth, E. W. A.	...	9th Madras Infantry.
Captain	...	Fisher, J.	...	1-2nd Gurkha Rifles.
Lt.-Colonel	...	FitzGerald, C. M.	...	S. & Transport Officer.
Major	...	FitzMaurice, R.	...	R. A.
Major	...	Fleming, A. S.	...	Moulmein Vol. Rifles.
Captain	...	Foord, E. R.	...	Inspr. Mily. Accounts.
Lt.-Colonel, C.B.	...	Forbes, W. E. G.	...	Royal War. Regt.
Major	...	Forde, L.	...	R. A.
Captain	...	Forestier-Walker, C. E.	...	R. A.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Captain ...	Forman, D. E. ...	R. A.
Lieutenant ...	Forrest, R. T. E. L. ...	B. B. & C. I. Ry. V. Rifles.
Captain ...	Forth, C. T. W. ...	30th Punjab Infantry.
Lt.-Colonel ...	Foss, K. M. ...	8th Madras Infantry.
Captain ...	Fowler, C. A. ...	22nd Punjab Infantry.
Captain ...	Fox, E. V. ...	N. Staffordshire Regt.
Captain ...	Fox-Strangways, T. S....	Royal Irish Rifles.
Surgn.-Genl., C.I.E., K.H.P.	Franklin, B. ...	I. M. S.
Captain ...	Fraser, L. D. ...	R. A.
Captain ...	Fraser, N. G. ...	4th Bombay Cavalry.
The Hon'ble K.C.S.I.	Fryer, Sir F. W. R. ...	Lt.-Governor, Burma.
Major ...	Fuller, R. W. ...	R. A.
Lieutenant ...	Furse, G. A. ...	R. A.
Captain ...	Fyffe, B. O. ...	Gloucestershire Regt.
Lieutenant ...	Gabbett, E. ...	U. Burma Vol. Rifles.
Captain ...	Galloway, F. L. ...	R. A.
Lt.-Colonel, C.B....	Gallwey, E. J. ...	Somerset L. Infantry.
Colonel ...	Garbett, C. H. V. ...	S. C.
Lieutenant ...	Gardiner, A. ...	R. E.
Captain ...	Gardner, R. M. S. ...	Gloucestershire Regt.
Captain ...	Garratt, H. S. ...	3rd Bombay Infantry.

ORDINARY MEMBERS (Contd.)

Rank.	Name.	Corps, &c.
Captain	Garraway, C. W.	D. A. A. General.
Lt. Colonel, com.	Gartside-Tipping R.F.	S. C.
Maj. Genl., com. ^{K.C.B.}	Gaselee, Sir A.	S. C.
Maj. Genl., ^{K.C.M.S.}	Gatacre, Sir W. F.	Comdg. Eastern Dist. [Eng. Genl.]
Lieutenant	Gaussen, A. W. D.	H. Lt. Infantry.
Lt. Colonel	Gibbs, M. I.	S. C.
Captain	Gilbert, G. E. L.	34th Punjab Pioneers.
Major	Giles, A.	15th Rajput Infantry
Major	Girard, H. E.	1st Bn. Calcutta Vol. [Inf. &c.]
Captain	Glasgow, W. J. T.	R. West Surrey Regt.
Colonel	Goad, H.	Dur. Army Remount [Department.]
Major	Godfrey, S. H.	S. C.
Lieutenant	Gosham, C. A. C.	3rd Punjab Cavalry.
Captain, com.	Goshal, S. W. S.	R. N., Div., R. I. Marine
Colonel, com.	Gordon, J. C. F.	S. Corps
Captain	Gordon, J. L. R.	14th Sikhs
Colonel	Gordon, R.	S. Corps
Lt. Colonel	Gordon, S. D.	10th Buff. Cavalry.
Lt. Colonel, com.	Gordon, W. F.	Gordon B. M. M. B. S.
Lt. Colonel, com.	Gore, S. J. C.	27th Dragoon Guards.
Lt. Colonel	Gore, G. A.	7th Buff. Cavalry.

ORDINARY MEMBERS (Contd.)

Corps, &c.	Rank.	Name.	Corps, &c.
A. A. General	Major ...	Gough, S. C. ...	4th Bengal Lancers.
	Major, D.S.O. ...	Graham, H. W. G. ...	5th Lancers.
	Captain ...	Graham, M. D. ...	Northamptonshire Regt.
Reg. Eastern [E.]	Lt.-Colonel ...	Grant, C. ...	D. A. A. Genl., Br.- Army Schools.
t. Infantry.	Colonel ...	Grant, H. G. ...	Seaforth Highlanders.
	Maj.-Genl., c.B. ...	Grant, H. F. ...	I. G. Cavalry, England.
Punjab Pioneers	Colonel ...	Grant, Jas. ...	S. C.
Rajput Infantry	Colonel ...	Grant, S. ...	R. E.
Calcutta V. [V.]	Lt.-Colonel ...	Grant, S. G. ...	Scottish Rifles.
t Surrey Regt.	Lieutenant ...	Grant, W. O. ...	27th Baluch Infantry.
ny Remount [Departm.]	Captain ...	Grant-Duff, A. ...	Royal Highlanders.
	Colonel, c.B. ...	Graves, B. C. ...	S. C.
b Cavalry.	Lt.-Colonel ...	Gray, W. du G. ...	1st Punjab Infantry.
, R. I. Manna	Colonel ...	Greenfield, R. M. ...	A. A. General.
	Captain ...	Greenhill-Gardyne, A. D. ...	Gordon Highlanders.
	Lt.-Colonel ...	Grey, A. ...	Punjab Light Horse.
	Captain ...	Grey, W. G. ...	23rd Madras Infantry.
Cavalry.	Esquire, C.I.E. ...	Griesbach, C. L. ...	Dir., Geological Survey of India.
landers.	Captain ...	Griffith, G. H. ...	R. E.
Guards,	Captain ...	Grimshaw, E. W. ...	24th Madras Infantry.
ancers.	Major ...	Grimston, R. E. ...	6th Bengal Cavalry.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Captain ...	Garraway, C. W. ...	D. A. A. General.
Lt.-Colonel, C.B. ...	Gartside-Tipping R.F. ...	S. C.
Maj.-Genl., G.C.I.E., K.C.B.	Gaselee, Sir A. ...	S. C.
Maj.-Genl., K.C.B., D.S.O.	Gatacre, Sir W. F. ...	Comdg. Eastern Dist. [England.]
Lieutenant ...	Gaussen, A. W. D. ...	H. Lt. Infantry.
Lt.-Colonel ...	Gibbs, M. I. ...	S. C.
Captain ...	Gilbert, G. E. L. ...	34th Punjab Pioneers.
Major ...	Giles, A. ...	13th Rajput Infantry.
Major ...	Girard, H. E. ...	1st Bn. Calcutta Vol. [Rifles.]
Captain ...	Glasgow, W. J. T. ...	R. West Surrey Regt.
Colonel ...	Goad, H. ...	Dir. Army Remount [Department.]
Major ...	Godfrey, S. H. ...	S. C.
Lieutenant ...	Godwin, C. A. C. ...	3rd Punjab Cavalry.
Captain, C.I.E. ...	Goodridge, W. S. ...	R. N., Dir., R. I. Marine
Colonel, C.I.E. ...	Gordon, J. C. F. ...	S. Corps.
Captain ...	Gordon, J. L. R. ...	15th Sikhs.
Colonel ...	Gordon, R. ...	S. Corps.
Lt.-Colonel ...	Gordon, S. D. ...	5th Bengal Cavalry.
Lt.-Colonel, v.c. ...	Gordon, W. E. ...	Gordon Highlanders.
Lt.-Colonel, C.B. ...	Gore, St. J. C. ...	5th Dragoon Guards,
Lt.-Colonel ...	Gott, G. A. ...	7th Bombay Lancers.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Major ...	Gough, S. C. ...	4th Bengal Lancers.
Major, D.S.O. ...	Graham, H. W. G. ...	5th Lancers.
Captain ...	Graham, M. D. ...	Northamptonshire Regt.
Lt.-Colonel ...	Grant, C. ...	D. A. A. Genl., Br.- Army Schools.
Colonel ...	Grant, H. G. ...	Seaforth Highlanders.
Maj.-Genl., C.B. ...	Grant, H. F. ...	I. G. Cavalry, England.
Colonel ...	Grant, Jas. ...	S. C.
Colonel ...	Grant, S. ...	R. E.
Lt.-Colonel ...	Grant, S. G. ...	Scottish Rifles.
Lieutenant ...	Grant, W. O. ...	27th Baluch Infantry.
Captain ...	Grant-Duff, A. ...	Royal Highlanders.
Colonel, C.B. ...	Graves, B. C. ...	S. C.
Lt.-Colonel ...	Gray, W. du G. ...	1st Punjab Infantry.
Colonel ...	Greenfield, R. M. ...	A. A. General.
Captain ...	Greenhill-Gardyne, A. D. ...	Gordon Highlanders.
Lt.-Colonel ...	Grey, A. ...	Punjab Light Horse.
Captain ...	Grey, W. G. ...	23rd Madras Infantry.
Esquire, C.I.E. ...	Griesbach, C. L. ...	Dir., Geological Survey of India.
Captain ...	Griffith, G. H. ...	R. E.
Captain ...	Grimshaw, E. W. ...	24th Madras Infantry.
Major ...	Grimston, R. E. ...	6th Bengal Cavalry.

ORDINARY MEMBERS—(Contd.)

Rank.		Name.		Corps, &c.
Captain	...	Grimston, S. B.	...	18th Bengal Lancers.
Lt.-Colonel	...	Grover, M. H. S.	...	2nd Punjab Cavalry.
Colonel	...	Gwatkin, F. S.	...	A. A. General.
Lieutenant	...	Hadow, A. L.	...	Norfolk Regt.
Colonel	...	Haggard, C.	...	Late Royal Irish Rifles.
Br.-General	...	Hailes, W.	...	Comdg. Allahabad Dist.
Captain	...	Hall, R. M.	...	13th Bengal Lancers.
Lieutenant	...	Hallett, R. L. H.	...	18th Bengal Infantry.
Lieutenant	...	Hamer, M. A.	...	29th Baluch Infantry.
Captain	...	Hamilton, A. S.	...	4th Sikhs.
Major	...	Hamilton, C.	...	2nd Rajput Infantry.
Maj.-Genl., K.C.B., D.S.O.		Hamilton, Sir, Ian S. M.		Adj.-Genl., S. Africa.
Major, D.S.O.	...	Hamilton, W. G.	...	Norfolk Regt.
Col., V.C., C.B., D.S.O.		Hammond, A. G.	...	S. Corps.
Colonel, C.B., A.D.C.		Harley, G. E.	...	A. A. General.
Lt.-Colonel	...	Harman, C. E.	...	2nd Connaught Rangers
Esquire	...	Harrington, H. S.	...	Chief Engr. K.-S. Raily.
Major	...	Harris, A. P. D.	...	17th Bengal Infantry.
Lt.-Colonel	...	Harris, C. W.	...	2nd Rajput Infantry.
Captain	...	Harrison, T. A.	...	Asst. Secy., Mily. Dept.
Colonel	...	Hart, H. H.	...	R. E.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Maj.-Genl., v.c., K.C.B.	Hart, Sir R. C. ...	Comdg. Quetta Dist.
Captain ...	Harvest, H. de V. ...	9th Madras Infantry.
Major ...	Harvey, J. E. ...	R. A.
Lt.-Colonel ...	Haughton, T. H. ...	20th Madras Infantry.
Lt.-Colonel ...	Hawkes, H. M. P. ...	I. Genl., S. & Transport.
Lieutenant ...	Hawkes, R. ...	1st Brahman Infantry.
Lt.-Colonel ...	Hawkins, F. ...	1st Brahman Infantry.
Lieutenant ...	Hawkins, W. ...	1st P. Vol. Rifles.
Major, D.S.O. ...	Hayden, F. A. ...	West Riding Regiment.
Lt.-Colonel ...	Hayes, C. H. ...	1st Bengal Lancers.
Captain ...	Hayes, R. H. ...	Middlesex Regiment.
Captain ...	Head, G. ...	1st Norfolk Regiment.
Major, v.D. ...	Heaven, F. G. ...	Madras Railway Vols.
Captain ...	Heffernan, H. W. ...	19th Madras Infantry.
Lt.-Colonel ...	Hegan, E. ...	Late 5th D. Guards.
Major ...	Hendley, H. ...	I. M. S.
Captain, D.S.O. ...	Henegan, J. ...	10th Gurkha Rifles.
Maj.-General ...	Henry, G. ...	Q. M. Genl. in India.
Lt.-Colonel ...	Herbert, C. ...	S. C.
Lt.-Colonel ...	Herbert, L. ...	C. I. Horse.
Colonel ...	Hervey, H. de la M. ...	Comdg. K.-Kurram Force

ORDINARY MEMBERS- (*Contd.*)

Rank.	Name.	Corps, &c.
Lt.-Colonel ...	Hewitt, A. L. ...	Comdg. Moulmein V. Rifles.
Esquire, C.I.E. ...	Higham, T. ...	Public Works Dept.
Maj.-Genl., C.B. ...	Hill, W. ...	I. G. of Vols. in India.
Lieutenant ...	Hill, W. L. B. ...	Gloucestershire Regt.
Colonel ...	Hilliard, W. E. ...	Asst. Qr. Master Genl.
Lieutenant ...	Hilson, R. J. ...	31st Burma Infantry.
Captain ...	Hislop, A. F. ...	5th Bombay Cavalry.
Maj.-Genl., C.B. ...	Hobday, T. F. ..	S. C.
Esquire ...	Hodson, C. W. ...	Dy. Secy., P. W. D.
Maj.-Genl., C.B. ...	Hogg, G. C. ...	S. Corps.
Colonel ...	Hogge, C. ...	33rd Punjab Infantry.
Major ...	Hoghton, F. A. ...	D. A. A. General.
Captain ...	Holbrook, E. R. St. G....	West Yorkshire Regt.
Major ...	Holland, H. F. ...	22nd Punjab Infantry.
Major ...	Holland, P. ...	47th Sikhs.
Major ...	Holloway, B. ...	2nd Madras Lancers.
Major ...	Holloway, E. L. ...	4th Madras Pioneers.
Captain, D.S.O. ...	Holman H. C. ...	16th Bengal Lancers.
Captain ...	Home, J. M. ...	1-2nd Gurkha Rifles.
Major ...	Houison-Craufurd, J. A.	7th Bombay Pioneers.
Captain ...	Howell, E. A. R. ...	S. & Transport Officer.

ORDINARY MEMBERS---(Contd.)

Rank.		Name.		Corps, &c.
Lieutenant	...	Howell, P.	...	Corps of Guides.
Colonel	...	Howlett, A.	...	Comdg. Southern Shan | Dist.
Captain	...	Hudson, A. K.	...	17th Bengal Lancers.
Major	...	Hudson, T. R. C.	...	R. A.
Lt.-Colonel, D.S.O.		Huggins, P. G.	...	21st Madras Pioneers.
Lieutenant	...	Hughes, C. C. A. A.	...	14th Bengal Lancers.
Major	...	Hughes, F. T. C.	...	Erinpura Irregular Force
Major, D.S.O.	...	Hume, C. V.	...	R. A.
Lt.-Colonel	...	Humphery, S.	...	Gloucestershire Regt.
Lt.-Colonel	...	Hutchins, H. L.	...	S. & Transport Officer.
Captain	...	Hutchinson, C A. R.	...	41st Dogra Infantry.
Lieutenant	...	Hutchinson, C. G.	...	33rd Burma Infantry.
Colonel	...	Hutchinson, H. D.	...	S. C.
Major	...	Ievers, O. G.	...	Cant. Magistrate.
Captain	...	Iggulden, H. A.	...	2nd Derby. Regt.
Lieutenant	...	Iles, F. W.	...	10th Jat Infantry.
Lt.-Colonel	...	Iremonger, R. G.	...	33rd Burma Infantry.
Esquire, C.S.I.	..	Irwin, G. R.	...	C. S.
Major	...	Ivatt, G. A.	...	Lincolnshire Regt.
Lt.-Colonel	...	Jackson, J.	...	9th Madras Infantry.
Major	...	Jacob, C. W.	...	24th Baluch Infantry.

ORDINARY MEMBERS—(Contd.)

Rank.		Name.		Corps, &c.
Captain	...	Jacob, H. F.	...	S. C.
Captain	...	James, W. B.	...	2nd Bengal Lancers.
Br.-General, C.B.	...	Jeffreys, P. D.	...	Comdg. Narbada Dist.
Major	...	Jellett, J. H.	...	R. A.
Captain	...	Jennings-Bramly, H.	...	Royal Highlanders.
Lt.-Genl., C.B.	...	Jennings, R. M.	...	S. C.
Major	...	Jermyn, T.	...	D. A. A. General.
Captain	...	Jerram, H.	...	Asst. Director Mily. Edn. [in India.]
Major, D.S.O.	...	Johnson, F. E.	...	R. A.
Major	...	Johnstone, A. A. J.	...	5th Punjab Infantry.
Major	...	Johnstone, B. A.	...	1st Madras Pioneers.
Captain, D.S.O.	...	Jones, H. J.	...	14th Sikhs.
Captain	...	Jordan, R. P.	...	Gloucestershire Regt.
Lt.-Colonel	...	Justice, C. Le G.	...	48th Bengal Pioneers.
Lt.-Colonel, D. S. O.	...	Keary, H. D'U.	...	31st Burma Infantry.
Major	...	Keate, C. R.	...	31st Burma Infantry.
Lt.-Colonel, D. S. O.	...	Keene, A.	...	R. A.
Lt.-Colonel	...	Keir, J. L.	...	R. A.
Colonel, C.B.	...	Kekewich, R. G.	...	North Lancashire Regt.
Col., C.B.	...	Kelly, J. G.	...	S. C.
Br.-General	...	Kemball, G. V.	...	I. Genl., W. African [Frontr. Force.]

ORDINARY MEMBERS—(Contd.)

Rank.		Name.		Corps, &c.
Captain	...	Kennedy, W. M.	...	Asst. Commissioner.
Captain	...	Kennien, R. L.	...	Asst. Political Agent.
Major	...	Kenny, H. T.	...	Asst. Secy., M. Dept.
Captain, D.S.O.	...	Kerrick, G. E. R.	...	Royal W. Surrey Regt.
Major	...	King, A. B.	...	Royal Irish Regt.
Esquire	...	Kirk, H. A.	...	Director of Telegraphs.
Major	...	Kirkpatrick, W.	...	1st Punjab Infantry.
Maj-General	...	Kitchener, F. W.	...	Comdg. Mobile Column, S. Africa.
Captain	...	Knapp, K. K.	...	R. A.
Captain	...	Knox, A. W. F.	...	5th Punjab Infantry.
Major	...	Kreyer, F. A. C.	...	16th Bombay Infantry.
Captain	...	Laing, F. C.	...	12th Bengal Infantry.
Lieutenant	...	Lance, F. F. H.	...	19th Bengal Lancers.
Major	...	Langley, J. P.	...	R. A.
Captain	...	Lash, A. O.	...	13th Bombay Infantry.
Captain	...	Lathbury, H. O.	...	R. E.
The Hon'ble, K.C.M.G.		Law, Sir E. F.	...	Member of Viceregal Council.
Esquire, C.I.E.	...	Lawrence, W. R.	...	Pte. Secy. to H. E. the Viceroy.
Captain	...	Lawson, O. H.	...	26th Punjab Infantry.
Br-Genl., C.B., D.S.O.		Leach, H. P.	...	Comdg. Presidency Dist.
Colonel	...	Leckie, F. W. V.	...	S. C.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Captain ...	Lee, J. F. ...	1st Punjab Vol. Rifles.
Esquire ...	Lees, O. C. ...	P. W. Dept.
Col. <i>Bart.</i> , C.B. ...	Leslie, Sir C. H. ...	S. Corps.
Major ...	Ley, W. G. ...	1st N. Staffordshire Regt
Lieutenant ...	Leyborne-Popham, E. ...	1st Madras Lancers.
Lt.-Colonel ...	Light, R. H. ...	17th Bombay Infantry.
Captain ...	Lightfoot, T. W. ...	8th Rajput Infantry.
Captain ...	Lillingston, W. E. G. ...	2nd Lancers H. C.
Major ...	Lindesay, E. ...	Late Royal Irish Regt.
Captain ...	Lindsay, H. A. P. ...	S. & Transport Officer.
Major ...	Little, C. B. ...	Somersetshire L. I.
Captain ...	Lloyd, W. E. E. ...	4th Infantry H. C.
Captain ...	Loch, G. G. ...	Royal Scots.
Colonel ...	Lomax, S. H. ...	Late Scottish Rifles.
Major ...	Long, S. S. ...	Army Service Corps.
Esquire ...	Lorimer, J. G. ...	C. S.
Major ...	Loudon, J. A. ...	13th Madras Infantry.
Maj.-Genl., C.B., C.S.I.	Lovett, B. ...	Late R. E.
General, G.C.B. ...	Low, Sir R. C. ...	Comdg. the Forces, [Bombay.]
Captain ..	Lowis, P. S. ...	R. A.
Captain, M.B. ...	Luard, H. B. ...	I. M. S.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Captain ...	Lubbock, G. ...	R. E.
Major, D.S.O. ...	Lucas, F. G. ...	2-5th Gurkha Rifles.
Captain ...	Luck, C. A. ...	2nd Punjab Cavalry.
Lt.-Genl., K.C.B. ...	Luck, Sir G. ...	Comdg. the Forces, Bengal
Colonel ...	Lugard, H. T. ...	R. A.
Lt.-Colonel ...	Lumsden, H. R. W. ...	3rd Brahman Infantry.
Captain ...	Lyne, C. V. N. ...	16th Madras Infantry.
Captain ...	Lyon, J. W. H. ...	25th Madras Infantry.
Major ...	Lyster, A. W. ...	S. Corps.
Lt.-Colonel, M.D. ...	McCartie, C. J. ...	I. M. S.
Major ...	McConaghey, H. ...	Royal Irish Fus.
Major ...	McDermott, J. ...	2nd P. V. Rifles.
Captain ...	McNeile, D. H. ...	19th Bengal Lancers.
Lt.-Colonel, D.S.O. ...	McSwiney, E. F. H. ...	1st Lancers H. C.
Captain ...	McVean, D. A. D. ...	45th Sikhs.
Captain ...	Macalpine-Leny, R. L. ...	16th Lancers.
Captain, D.S.O. ...	Macandrew, H. J. M. ...	5th Bengal Cavalry.
Lieutenant ...	Macaulay, D. I. M. ...	1st Bengal Lancers.
Lt.-Colonel, C.B. ...	Macdonald, J. R. L. ...	R. E.
The Hon'ble, G.C.S.I. ...	MacDonnell, Sir A. P. ...	C. S.
Captain ...	MacGeorge, H. K. ...	14th Bombay Infantry.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Br.-Genl., C.B., D.S.O.	Macgregor, C. R. ...	Comdg. Assam Dist.
Lt.-Colonel, C.B. ...	Mackenzie, C. J. ...	Seaforth Highls.
Lt.-Colonel ...	Mackenzie-Kennedy, E.C.W.	1st Madras Pioneers.
Captain ...	MacLachlan, T. R. ...	40th Punjab Infantry.
Captain ...	Maclean, A. H. ...	A. and S. Highlanders.
Major, D.S.O. ...	MacMunn, G. F. ...	R. A.
Major, D.S.O. ...	Maconochy, E.W.S.K. ...	D A. Q. M. Genl., I. B.
Captain, D.S.O. ...	Macquoid, C. E. E. F. K.	1st Lancers H. C.
Major ...	Macready, C. F. N. ...	Gordon Highlanders.
Captain ...	Madden, T. E. ...	17th Bengal Infantry.
Major ...	Mahon, R. H. ...	R. A.
Lt.-Colonel ...	Maisey, F. C. ...	S. C.
Br.-General, C.B. ...	Maitland, P. J. ...	Comdg. Aden Dist.
Captain ...	Major, F. F. ...	1st Infantry H. C.
Captain ...	Mansel, H. A. ...	Dorsetshire Regt.
Lt.-Colonel ...	Mansfield, H. ...	Dy. Dir. Genl. for Trans.
Major ...	Mardall, W. S. ...	17th Bengal Lancers.
Captain ...	Marindin, A. H. ...	1st Royal Highlanders.
Major ...	Marriott, E. F. ...	S. Corps.
Major-General ...	Marsh, F. H. B. ...	S. C.
Maj.-Genl., C.I.E. ...	Marshall, G. F. L. ...	Late R. E.

ORDINARY MEMBERS—(Contd)

Rank.	Name.	Corps, &c.
Captain ...	Marshall, T. E. ...	R. A.
Colonel ...	Martin, A. R. ...	Asst. Mily. Secy., W. [Office.
Lt-Colonel ...	Martin, M. ...	R. E.
Major ...	Massie, R. H. ...	R. A.
Lt.-Col., C.I.E., v.D.	Masson, D. P. ...	1st P. V. Rifles.
Major ...	Massy, G. ...	Norfolk Regiment.
Lt.-Colonel ...	Massy, H. S. ...	19th Bengal Lancers.
Colonel ...	Masters, A. ...	A. Q. M. General.
Major ...	Maurice, F. B. ...	Derbyshire Regiment.
Lieutenant ...	Maxwell, D. W. ...	1-4th Gurkha Rifles.
Major ...	Maxwell, G. W. ...	A. A. General.
Captain ...	Maxwell, H. G. ...	16th Bengal Lancers.
Major ...	Maxwell, N. ...	R. A.
Major ...	Mayhew, H. S. ...	Border Regiment.
Major ...	Mayne, C. B. ...	R. E.
Colonel, C.B., A.D.C.	Mayne, R. C. G. ...	30th Baluch Infantry.
Lt.-Colonel ...	Meade, J. W. B. ...	3rd Lancers H. C.
Lt.-Colonel, C.I.E.	Meade, M. J. ...	Political Agent.
Captain ...	Mears, A. ...	S. Corps.
Captain ...	Medley, A. G. ...	D. A. A. General.
Major ...	Medley, E. J. ...	17th Bengal Lancers.

ORDINARY MEMBERS—(*Contd.*)

Rank.	Name.	Corps, &c.
Maj.-Genl., K. C. B., C.M.G.	Meiklejohn, Sir W. H. ...	Comdg. Oudh Dist.
Lieutenant ...	Melliss, F. G. ...	13th Bombay Infantry.
Colonel, K.C.S.I. ...	Melliss, Sir H. ...	S. C.
Major, M.B. ...	Melville, C. H. ...	R. A. M. Corps.
Major ...	Melville, J. S. ...	4th Rajput Infantry.
Captain ...	Mereer, W. H. W. ...	26th Madras Infantry.
Esquire ...	Meredith, A. ...	Deputy Commissioner
Captain ...	Miles, P. J. ...	4th Punjab Infantry.
Colonel, C.S.I. ...	Miley, J. A. ...	Acett. Genl. M. Dept.
Major ...	Millar, W. H. ...	46th Punjab Infantry.
Captain ...	Milne, J. W. ...	22nd Madras Infantry.
Major, D.S.O. ...	Moberley, F. J. ...	37th Dogra Infantry.
Lieutenant ...	Moens, A. W. H. M. ...	2nd Sikhs.
Major ...	Molesworth, H. C. ...	R. A.
Captain, D.S.O. ...	Molynaux, E. M. J. ...	12th Bengal Cavalry.
Colonel ...	Monck-Mason, G. G. ...	R. A.
Lt.-Colonel ...	Money, A. W. ...	R. A.
Colonel, C.B. ...	Money, E. A. ...	S. Corps.
Lt.-Colonel ...	Money, G. A. ...	18th Bengal Lancers.
Colonel ...	Money, G. E. ...	S. C.
Captain ...	Money-Shewan, R. E. ...	R. E.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Lieutenant ...	Menreal, G. ...	Wiltshire Regiment.
Major ...	Montgomery, C. A. S. ...	1st Bombay Grenadiers.
Lt.-Colonel ...	Montgomery, J. A. L. ...	S. C.
Lt.-Colonel ...	Moore, G. H. J. ...	Bhopal Battalion.
Br.-Genl., C.B., D.S.O.	More-Molyneux, G. H. ...	Comdg. Rohilkhand Dist.
Captain ...	Morgan, A. H. ...	U. Burma Vol. Rifles.
Captain ...	Morris, R. L. ...	3rd Bengal Cavalry.
Major ...	Morris, W. A. ...	R. A. M. C.
Lt.-Colonel ...	Morrison, R. H. ...	Late 18th Hussars.
Captain ...	Morton, E. R. ...	47th Sikhs.
Maj.-Genl., K. C.I.E., C.B.	Morton, Sir G. de C. ...	Comdg. Dublin, Dist.
Captain ...	Moulton-Barrett, H. P.	A. & S. Highs.
Lt.-Colonel ...	Mullaly, H. ...	R. E.
Major ...	Mullins, W. B. ...	27th Punjab Infantry.
Br.-Genl., K.C.B. ...	Murray, Sir J. W. ...	Comdg. Southern Dist.
Major ...	Muspratt-Williams, C. A.	R. A.
Captain ...	Nairne, E. S. ...	R. A.
Captain ...	Nangle, K. E. ...	3rd Infantry H. C.
Maj. the Hon'ble	Napier, H. D. ...	C. I. Herse.
Captain ...	Napier, G. S. F. ...	Oxford. Light Infantry.
Lieutenant ...	Nash, W. G. ...	B. B. & C. I. Ry. V. Rifles

ORDINARY MEMBERS—(Contd.).

Rank.	Name.	Corps, &c.
Lt.-Colonel ...	Nedham, E. M. ...	Cant. Magistrate.
Captain ...	Nethersole, A. R. ...	5th Madras Infantry.
Captain ...	Nethersole, F. R. ...	Assistant Commissioner.
Br.-General ...	Neville, J. P. C. ...	D. A. General.
Lt.-Colonel ...	Newell, W. J. ...	8th Rajput Infantry.
Lt.-Colonel ...	Newill, J. H. ...	S. C.
General ...	Nicholl, T. ...	R. A.
Major ...	Nicholls, A. ...	2nd Punjab Infantry.
Captain ...	Nicholson, C. L. ...	Yorkshire Regiment.
Lt.-Genl., K.C.B. ...	Nicholson, Sir W. G. ...	Dir. of Mily. Intelligence
Lt.-Genl., C.B. ...	Nicolson, M. H. ...	S. C.
Captain ...	Nisbet, F. C. ...	Gloucestershire Regt.
Major ...	Noblett, L. H. ...	Royal Irish Rifles.
Major ...	Norie, C. E. de M. ...	1-2nd Gurkha Rifles.
Captain ...	Norman, H. H. ...	Northamptonshire Regt.
Major ...	Norman, W. W. ...	2nd Punjab Cavalry.
H. E. the Right Hon'ble, G.C.I.E., C.B.	Northcote, H. S., Lord...	Governor of Bombay.
Captain ...	Nuttall, J. R. ...	44th Gurkha Rifles.
Captain ...	O'Connor, W. F. T. ...	R. A.
Major ...	O'Donnell, G. B. ...	S. C.
Lt.-Colonel ...	O'Donoghue, M. E. ...	2nd Madras Infantry.

ORDINARY MEMBERS—(Contd.)

Rank.		Name.		Corps, &c.
Esquire	...	O'Dwyer, M. F.	...	C. S.
Lt.-Colonel	...	O'Leary, T. E.	...	Royal Irish Fusiliers.
Lt.-Colonel	...	O'Neill, W. H.	...	R. A.
Colonel	...	O'Sullivan, G. H. W.	...	R. E.
Captain	...	Ogg, G. S.	...	R. A.
Major	...	Oldfield, C. G.	...	R. A.
Captain	...	Oldfield, T. A. F. R.	...	16th Bombay Infantry.
Major	...	Ommanney, G. S.	...	2-1st Gurkha Rifles.
Major	...	Ormerod, G. S.	...	2nd Royal Muns. Fus.
Colonel, C.I.E.	...	Ottley, J. W.	...	R. E.
Lt.-Colonel	...	Ovens, G. H.	...	Border Regt.
Lt.-Colonel	...	Owen, R.	...	Late 21st Hussars.
Colonel	...	Paley, E. G.	...	Late 18th Hussars.
H. E. Genl., G.C.I.E., K.C.B.	...	Palmer, Sir A. P.	...	C-in-C. in India.
Major	...	Palmer, H. I. E.	...	5th Punjab Cavalry.
Captain	...	Parker, N. T.	...	6th Jat Infantry.
Lt.-Colonel	...	Parkinson, J. R.	...	Hampshire Regiment.
Major	...	Parsons, C. G.	...	S. C.
Esquire, C. I. E.	...	Patterson, A. B.	...	C. S.
Lt.-Colonel	...	Patterson, G.	...	Wyde Bay Mounted In- fantry, Queensland De- fence Forces.
Major	...	Patterson, H. McN	...	5th Bengal Cavalry.

ORDINARY MEMBERS--(Contd.)

Rank.	Name.	Corps, &c.
Colonel, D.S.O. ...	Payne, R. L. ...	Royal Inns. Fus.
Major ...	Peach, E. ...	3rd Madras Infantry.
Esquire ...	Peacock, E. B. ...	C. Service.
Colonel, C.M.G. ...	Peacocke, W. ...	D. Q. M. General.
Lieutenant ...	Peart, C. L. ...	4th Sikhs.
Captain ...	Pemberton, W. A. ...	Naini Tal V. Rifles.
Br.-General ...	Penton, H. E. ...	Comdg. Nagpore Dist.
Captain ...	Perkins, J. C. C. ...	Mily. Accts. Dept.
Major, C.M.G. ...	Peyton, W. J. ...	7th Bombay Lancers.
Major, D.S.O. ...	Phillips, I. ...	1-5th Gurkha Rifles.
Lt.-Colonel ...	Phillips, C. R. ...	19th Bombay Infantry.
Captain ...	Phillips, R. S. ...	2nd Sikh Infantry.
Major ...	Phillips, W. E. ...	28th Punjab Infantry.
Captain ...	Pickard, F. B. B. ...	1st Royal W. S. Regt.
Major ...	Pickard-Cambridge, E.D.	Bedfordshire Regt.
Captain ...	Pierce, F. G. ...	9th Madras Infantry.
Lt.-Colonel ...	Piers, W. B. ...	3rd Bombay Infantry.
Captain ...	Pigou, F. H. ...	1st Infantry H. C.
Major ...	Pinney, R. J. ...	Royal Fusiliers.
Major ...	Pirie, C. P. W. ...	15th Bengal Lancers.
Captain ...	Playfair, A. ...	Asst. Commissioner.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Captain ...	Playfair, F. H. G. ...	D. A. A. Genl., Musky.
Colonel ...	Plowden, F. H. ...	A. A. General.
Lt.-Colonel ...	Pollard, W. C. ...	15th Bengal Lancers.
Lt.-Colonel ...	Pollock, F. G. ...	7th Bengal Lancers.
Lieutenant ...	Polwhele, A. C. ...	Naini Tal V. Rifles.
Colonel ...	Porter, A. R. ...	Comdg. at Mooltan.
Lt.-Colonel ...	Porter, H. E. ...	S. C.
Esquire ...	Potter, C. D. ...	Survey Department.
Major ...	Potts, F. ...	R. A.
Captain ...	Powell, A. L. ...	19th Hussars.
Major ...	Powell, S. H. ...	R. E.
Captain ...	Powell, W. B. ...	9th Madras Infantry.
Captain ...	Prentis, W. S. ...	29th Burma Infantry.
Major ...	Pressey, A. ...	4th Rajput Infantry.
Lt.-Colonel, D.S.O. ...	Prestou, J. E. ...	S. Corps.
Esquire, C.I.E. ...	Prestou, S. ...	Punjab P. W. D.
Lt.-Colonel ...	Prichard, G. P. M. ...	S. Corps.
Colonel ...	Prickett, T. ...	H. P.
Lt.-Colonel ...	Priestley, N. G. ...	2nd Punjab Vol. Rifles.
Lt.-Colonel ...	Pringle, A. ...	S. Corps.
Lieutenant ...	Prissick, C. ...	2nd Sikhs.

ORDINARY MEMBERS—(Contd.)

Rank.		Name.		Corps, &c.
Lieutenant	...	Pryce, H. E. ap R.	...	18th Bengal Infantry.
Colonel	...	Pulley, C.	...	S. C.
Lt.-Colonel	...	Purvis, A. B.	..	R. A.
Lt.-Colonel	...	Quentin, W.	...	4th Bombay Rifles.
Major	...	Radcliff, S. G.	...	33rd Burma Infantry.
Lt.-Colonel	...	Radcliffe, A. W. T.	...	45th Sikhs.
Lieutenant	...	Radice, A. H.	...	Gloucestershire Regt.
Major	...	Rainey-Robinson, R. M.	...	12th Burma Infantry.
Lt.-Colonel, C.B.	...	Ramsay, J. G.	...	24th Punjab Infantry.
Lt.-Colonel	...	Ramsden, H. F. S.	...	Mily. Accounts Dept.
Lt.-Colonel	...	Ranken, G. P.	...	46th Punjab Infantry.
Colonel	...	Ranking, W. L.	...	S. C.
Major	...	Rawlins, G. W.	...	12th Bengal Cavalry.
Lieutenant	...	Rawson, R. I.	...	Gloucestershire Regt.
Lt.-Colonel	...	Read, H.	...	4th Rajput Infantry.
Captain	...	Redmond, W. J. H.	...	Rangoon V. Rifles.
Br.-Genl., K.C.B.	...	Reid, Sir, A. J. F.	...	Comdg. Assam Dist.
Esquire	...	Rendell, T. H.	...	Survey Department.
Captain	...	Rennick, F.	...	46th Punjab Infantry.
Major	...	Reynolds, T. G. C.	...	2nd Royal Innis. Fus.
Captain	...	Rickards, E.	...	4th Dragoon Guards.

ORDINARY MEMBERS—(Contd.)

Rank.		Name.		Corps, &c.
Captain	...	Ricketts, L. H.	...	12th Burma Infantry.
Colonel	...	Riddell, W. H.	...	A. A. General.
Major	..	Rideout, F. C. W.	...	S. & Trans. Officer.
Colonel, v. c.	...	Ridgeway, R. K.	...	S. Corps.
Captain	...	Rigby, G. C.	...	Wiltshire Regt.
Colonel, c.m.g.	...	Rind, A. T. S. A.	...	S. Corps.
Major	...	Ringwood, H.	...	East Surrey Regt.
Lt.-Colonel	...	Rippon, G.	...	29th Burma Infantry.
Esquire, C.I.E.	...	Risley, H. H.	...	C. S.
The Hon'ble, K.C.S.I.		Rivaz, Sir C. M.	...	Member of the Viceregal Council.
Major	...	Roberts, H. L.	...	1st Bengal Lancers.
Surgn.-Lieut.	...	Robertson, A. W.	...	E. I. Ry. V. Rifles.
The Hon'ble	...	Robertson, F. A.	...	C. Service.
Captain	...	Robertson, G. A.	...	D. A. Q. M. G., I. B.
Captain	...	Robertson, P. R.	...	1st Scottish Rifles.
Lt.-Colonel, D. S. O.		Robertson, W. R.	...	3rd Dragoon Guards.
Lt.-Colonel	...	Robinson, G. H.	...	2-1st Gurkha Rifles.
Colonel, c.B.	...	Roehfort, A. N.	...	R. A.
Lt.-Colonel	...	Rodwell, E. H.	...	20th Punjab Infantry.
Major	...	Rogers, J. B. Leslie	...	Dehra Dun M. Rifles.
Captain	...	Roome, R. E.	...	6th Bombay Cavalry.

ORDINARY MEMBERS —(Contd.)

Rank.	Name.	Corps, &c.
Captain, C.I.E. ...	Roos-Keppel, G. O. ...	S. C.
Lt.-Colonel ...	Rose, H. ...	1-3rd Gurkha Rifles.
Esquire ...	Rose, H. A. ...	C. S.
Br.-Genl., D.S.O. ...	Rose, H. M. ...	Comdg. Malakand Force.
Colonel ...	Rossetor, J. H. ...	R. A.
Captain ...	Rouse, A. H. T. ...	1st Madras Pioneers.
Lieutenant ...	Rouse, F. P. P. ...	1st Lancers H. C.
Major ...	Rouse, H. ...	R. A.
Major, D.S.O. ...	Roweroft, G. F. ...	15th Sikhs.
Captain ...	Rowley, F. G. M. ...	Middlesex Regt.
Lieutenant ...	Ruck, J. E. ...	Gloucestershire Regt.
Lieutenant ...	Randall, A. M. ...	2-4th Gurkha Rifles.
Lt.-Colonel, D. S. O. ...	Rundall, F. M. ...	1-4th Gurkha Rifles.
Lieutenant ...	Rushton, C. E. ...	U. Burma Vol. Rifles.
Lt.-Genl., G. C. B., K.C.M.G. ...	Russell, Sir B. C. ...	Comdg. Southern Dist. England.
Major ...	Rycroft, W. H. ...	11th Hussars.
Captain ...	Salkeld, R. E. ...	Oxfordshire L. I.
Major ...	Salveson, C. E. ...	R. E.
Captain ...	Samson, L. L. R. ...	Lancashire Fus.
Lt.-Colonel, D. S. O. ...	Sandbach, A. E. ...	R. E.
Captain ...	Sartorius, G. C. F. ...	19th Bombay Infantry.

ORDINARY MEMBERS- (Contd.)

Rank.	Name.	Corps, &c.
Captain ...	Saunders, A. R. ...	2nd Lancers H. C.
Colonel ...	Saunders, M. W. ...	R. A., A. A. General.
Lieutenant ...	Sawyer, G. H. ...	23rd Punjab Pioneers.
Lt.-Colonel, C. I. E., D.S.O.	Scallan, R. I. ...	23rd Bombay Rifles.
Colonel, C.B. ...	Scott, C. H. ...	R. A.
Lt.-Colonel, C.B. ...	Scott, W. A. ...	Gordon Highlanders.
Lieutenant ...	Scott-Elliot, C. R. ...	4th Madras Pioneers.
Major ...	Serace-Dickins, S. W. ...	2nd Highland L. Infy.
Major ...	Searle, C. T. A. ...	36th Sikhs.
Major ...	Selwyn, C. H. ...	12th Bengal Cavalry.
Captain ...	Senior, H. W. R. ...	20th Punjab Infantry.
Major ...	Sewell, J. H. ...	Retired.
Major ...	Shadwell, L. J. ...	D. A. A. G. for Instn.
Major ...	Shakespear, L. W. ...	Assam Military Police.
Lt.-Colonel ...	Shaw, G. J. ...	6th Madras Infantry.
Major ...	Shea, J. S. M. ...	15th Bengal Lancers.
Lt.-Col., D.S.O., M.B.	Shearer, J. ...	I. M. S.
Lt. Colonel ...	Sherard, R. W. ...	6th Bombay Cavalry.
Captain ...	Sherwood, H. J. ...	R. E.
Major, D.S.O. ...	Shore, O. B. S. F. ...	18th Bengal Lancers.
Lieutenant ...	Short, P. H. ...	Gloucestershire Regt.

ORDINARY MEMBERS (Contd.)

Rank.	Name.	Corps, &c.
Lt. Colonel	... Showers, H. L.	... S. C.
Esquire	... Shubrick, R. L.	... Supdt., Central Jail.
Captain	... Sillery, J. J. D.	... 25th Bombay Rifles.
Lt. Colonel	... Simpson, C. N.	... R. A.
Lt. Colonel	... Simpson, C. R.	... Middlesex Regt.
Major-General	... Simpson, G.	... Comdg. Mandalay Dist.
Lt. Colonel	... Simpson, G. G.	... R. A.
Lieutenant	... Simpson, W. H.	... 33rd Burma Infantry.
Lt. Colonel	... Sinclair, H. M.	... R. E.
Major, M.L.	... Skinner, B. M.	... R. A. M. Corps.
Captain	... Skinner, F. St. D.	... 2nd Royal Sussex Regt.
Captain	... Smith, A. Le F.	... 2nd Rajput Infantry.
Captain	... Smith, F. A.	... 2nd Rajput Infantry.
Esquire	... Smith, H. W.	... Supdt. of Telegraphs.
Major, V.C., C.I.E.	... Smith, J. M. Munn	... S. C.
Major	... Smith, T. H.	... 12th Bengal Cavalry.
Lieutenant	... Smith-Bowse, G. B. W.	... 4th Punjab Infantry.
Major	... Smyth, V. S.	... R. Warwickshire Regt.
Captain	... Soady, G. J. F. M.	... 19th Punjab Infantry.
Major	... Southey, E.	... 3rd Baluch Infantry.
Major	... Spink, G. T.	... 14th North L. Horse.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Captain ...	Spence, A. H. O. ...	C. I. Horse.
Lt. Colonel ...	Spencer, D. B. ..	I. M. S.
Surgn.-Genl., C.B. M.D.	Spencer, L. D. ...	I. M. S.
The Ven'ble Arch- deacon.	Spens, A. N. W. ...	Eccles. Establt.
Colonel ...	Spratt-Bowring, F. T. N.	R. E.
Major ...	Stainforth, L. C. H. ...	38th Dogras.
Major, D.S.O. ...	Stanton, H. E. ...	Asst. Mily. Secy., Bombay.
Colonel ...	Stawell, G. D. ...	Dir. of Mily. Edn. in India.
Maj.-Genl. (K.C.I.E.), C.B.	Stedman, Sir E. ...	S. C.
Lieutenant ...	Steel, R. A. ...	17th Bengal Lancers.
Major ...	Stevens, C. ...	S. C.
Lt.-Colonel ...	Stevens, C. F. ...	15th Madras Infantry.
Colonel ...	Stevens, G. M. ..	R. A.
Major ...	Stevens, M. ...	13th Rajput Infantry.
Captain ...	Stevens, N. M. C. ...	21st Madras Pioneers.
Captain ...	Stevens, S. R. ...	33rd Burma Infantry.
Lieutenant ...	Stewart, H. ...	4th Infantry H. C.
Captain ..	Stewart, J. A. ...	7th Rajput Infantry.
Major ...	Stirling, W. G. H. ...	2nd Madras Infantry.
Br.-General ...	Stopford, A. B. ...	R. A.
Captain ...	Stotherd, E. A. W. ...	4th Lancers H. C.

ORDINARY MEMBERS (Contd.)

Rank.	Name.	Corps, &c.
Major	... Strachan, E. A.	... Royal Inns Fus.
Captain	... Strachey, B.	... S. Corps.
Major	... Strachey, J.	... 11th Rajput Infantry.
Major	... Strachey, R. J.	... D. A. Q. M. General.
Major	... Strange, R. G.	... R. A.
Captain	... Strick, J. A.	... 1st Shropshire L. I.
Major	... Strickland, P. C. H.	... I. M. S.
Major	... Strickland, W. A. W.	... Deputy Commissioner.
Lt. Colonel	... Stuart, C. J. L.	... 2nd Punjab Cavalry.
Major	... Stuart, R. C. O.	... R. A.
Lt. Colonel	... Sturges, W. E.	... Northumberland Fus.
Lt. Colonel	... Stuart, W. H.	... R. A.
Major	... Sutton, H. G.	... 27th Madras Infantry.
Lt. Colonel	... Syams, A. T.	... Royal Irish Rifles.
Captain	... Savers, W. H.	... Punjab Light Horse.
Captain	... Swarston, C. O.	... 18th Punjab Lancers.
Major	... Swayne, E. J. E.	... 10th Rajput Infantry.
Captain	... Sweet, E. H.	... 2nd Gurkha Rifles.
Captain	... Sykes, P. M.	... 2nd Dragoon Cavalry.
Major and Surgeon	... Sykes, W. A.	... I. M. S.
Captain	... Sykes, W. E.	... 1st Cavalry L. I.

ORDINARY MEMBERS—(Contd).

Corps, &c.	Rank.	Name.	Corps, &c.
Imms. Fus.	Major ...	Symonds, G. D. ...	R. A.
ps.	Lieutenant ...	Tahourdin, S. M. ...	12th Bengal Cavalry.
Rajput Infantr.	Lieutenant ...	Tandy, E. A. ...	R. E.
Q. M. Genera	Major, D.S.O. ...	Tanner, J. A. ...	R. E., D. A. A. General.
	Captain ...	Tarte, B. R. K. ...	East Kent Regt.
Shropshire L. I.	Major, D.S.O. ...	Taylor, H. N. ...	30th Burma Infantry.
S.	Surgeon-General, C.B., M. D., K.H.P.	Taylor, W. ...	Dir. Genl., A. M. S.
ty Commissione	Lt.-Col., C.I.E. ...	Temple, R. C. ...	S. Corps.
Punjab Cavalry.	Lieutenant ...	Temple, W. A. M. ...	Gloucestershire Regt.
	Major ...	Templer, C. B. ...	19th Bengal Lancers.
umberland Fus	Major ...	Templer, H. ...	5th Punjab Cavalry.
	Captain ...	Templer, J. M. ...	B. B. & C.I.Ry.V. Rifles.
Madras Infantr.	Captain ...	Tennant, E. ...	3rd Lancers H. C.
Irish Rifles.	Lt.-Colonel, D.S.O. ...	Teversham, R. K. ...	3rd Madras Infantry.
b Light Horse.	Captain ...	Thackeray, H. J. ...	Highland L. I.
Bengal Lancers.	Captain ...	Thompson, H. A. ...	2nd Connaught Rangers
Rajput Infantr.	Vety.-Col., C.B. ...	Thomson, H. ...	P. Vety. Officer in India
Gurkha Rifles.	Major ...	Thomson, W. D. ...	Asst. JudgeAdvoc. Genl.
agoon Guards.	Esquire ...	Thorburn, S. S. ...	C. Service.
S.	Major ...	Thring, R. H. D. ...	1st Madras Lancers.
shire Fus.	Captain ...	Thuillier, H. F. ...	R. E.

ORDINARY MEMBERS (Contd.)

Rank.	Name.	Corps, &c.
Colonel, D.S.O.	Payne, R. L.	... Royal Innis Fus.
Major	... Peach, E.	... 3rd Madras Infantry.
Esquire	... Pencock, E. B.	... C. Service.
Colonel, C.M.G.	... Pencocke, W.	... D. Q. M. General.
Lieutenant	... Peart, C. L.	... 4th Sikhs.
Captain	... Pemberton, W. A.	... Non-Tal V. Rifles.
Br. General	... Penton, H. E.	... Comd'g. Nagpore Dist.
Captain	... Perkins, J. C. C.	... Mily. Agents. Dept.
Major, C.M.G.	... Peyton, W. J.	... 7th Bombay Lancers.
Major, D.S.O.	... Phillips, L.	... 15th Gurkha Rifles.
Lt. Colonel	... Phillips, C. B.	... 19th Bombay Infantry.
Captain	... Phillips, R. B.	... 2nd Sikh Infantry.
Major	... Phillips, W. E.	... 28th Punjab Infantry.
Captain	... Pickard, F. B. B.	... 1st Royal W. S. Rifles.
Major	... Pickard-Cochran, E. D.	... Bedfordshire Regt.
Captain	... Pierce, F. G.	... 9th Madras Infantry.
Lt. Colonel	... Piers, W. B.	... 3rd Bombay Infantry.
Captain	... Pignatelli, F. H.	... 1st Infantry H. C.
Major	... Poincy, R. J.	... Royal Fusiliers.
Major	... Poirer, C. P. W.	... 15th Bedford Lancers.
Captain	... Polignac, A.	... Asst. Commissioner.

ORDINARY MEMBERS (*Contd.*)

Rank.	Name.	Corps, &c.
Captain	Playfair, F. H. G.	D. A. A. Genl, Musky.
Colonel	Plowden, F. H.	A. A. General.
Lt.-Colonel	Pellard, W. C.	15th Bengal Lancers.
Lt.-Colonel	Pollock, F. G.	7th Bengal Lancers.
Lieutenant	Polwhele, A. C.	Naini Tal V. Rifles.
Colonel	Porter, A. R.	Comdg. at Mooltan.
Lt.-Colonel	Porter, H. E.	S. C.
Esquire	Potter, C. D.	Survey Department.
Major	Potts, F.	R. A.
Captain	Powell, A. L.	19th Hussars.
Major	Powell, S. H.	R. E.
Captain	Powell, W. B.	9th Madras Infantry.
Captain	Prentis, W. S.	29th Burma Infantry.
Major	Pressey, A.	4th Rajput Infantry.
Lt.-Colonel, D.S.O.	Preston, J. E.	S. Corps.
Esquire, C.I.E.	Preston, S.	Punjab P. W. D.
Lt.-Colonel	Prichard, G. P. M.	S. Corps.
Colonel	Prickett, T.	H. P.
Lt.-Colonel	Priestley, N. G.	2nd Punjab Vol. Rifles.
Lt.-Colonel	Pringle, A.	S. Corps.
Lieutenant	Prissick, C.	2nd Sikhs.

ORDINARY MEMBERS (Contd.)

Rank.	Name.	Corps, &c.
Lieutenant	... Pryce, H. E. ap R.	... 18th Bengal Infantry.
Colonel	... Pulley, C.	... S. C.
Lt. Colonel	... Purvis, A. B.	... R. A.
Lt. Colonel	... Quentin, W.	... 4th Bombay Rifles.
Major	... Radcliff, S. G.	... 33rd Burma Infantry.
Lt. Colonel	... Radcliffe, A. W. T.	... 45th Sikhs.
Lieutenant	... Reece, A. H.	... Gloucestershire Regt.
Major	... Raney Robinson, R. M.	... 12th Burma Infantry.
Lt. Colonel, c.m.	... Ransay, J. G.	... 24th Punjab Infantry.
Lt. Colonel	... Ramsden, H. F. S.	... Milly. Accounts Dept.
Lt. Colonel	... Ranken, G. P.	... 46th Punjab Infantry.
Colonel	... Ranking, W. L.	... S. C.
Major	... Rawlins, G. W.	... 12th Bengal Cavalry.
Lieutenant	... Rawson, R. L.	... Gloucestershire Regt.
Lt. Colonel	... Reel, H.	... 4th Rajput Infantry.
Captain	... Richmond, W. J. H.	... Rangoon V. Rifles.
Br. Genl., c.m.	... Reid-Sir, A. J. F.	... Comdg. A. Am. Dist.
Esquire	... Rendell, T. H.	... Survey Department.
Captain	... Rennie, F.	... 4th Punjab Infantry.
Major	... Reynolds, T. G. C.	... 2nd Royal Innisk. Fus.
Captain	... Richards, E.	... 4th Dragoon Guards.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Captain ...	Ricketts, L. H. ...	12th Burma Infantry.
Colonel ...	Riddell, W. H. ...	A. A. General.
Major ...	Rideout, F. C. W. ...	S. & Trans. Officer.
Colonel, v. c. ...	Ridgeway, R. K. ...	S. Corps.
Captain ...	Rigby, G. C. ...	Wiltshire Regt.
Colonel, c.m.a. ...	Rind, A. T. S. A. ...	S. Corps.
Major ...	Ringwood, H. ...	East Surrey Regt.
Lt.-Colonel ...	Rippon, G. ...	29th Burma Infantry.
Esquire, c.i.e. ...	Risley, H. H. ...	C. S.
The Hon'ble, k.c.s.i.	Rivaz, Sir C. M. ...	Member of the Viceregal Council.
Major ...	Roberts, H. L. ...	1st Bengal Lancers.
Surgn.-Lieut. ...	Robertson, A. W. ...	E. I. Ry. V. Rifles.
The Hon'ble ...	Robertson, F. A. ...	C. Service.
Captain ...	Robertson, G. A. ...	D. A. Q. M. G., I. B.
Captain ...	Robertson, P. R. ...	1st Scottish Rifles.
Lt.-Colonel, d. s. o.	Robertson, W. R. ...	3rd Dragoon Guards.
Lt.-Colonel ...	Robinson, G. H. ...	2-1st Gurkha Rifles.
Colonel, c.B. ...	Roehfort, A. N. ...	R. A.
Lt.-Colonel ...	Rodwell, E. H. ...	20th Punjab Infantry.
Major ...	Rogers, J. B. Leslie ...	Dehra Dun M. Rifles.
Captain ...	Roome, R. E. ...	6th Bombay Cavalry.

ORDINARY MEMBERS. *Contd.*

Pr.	Name	Corps, &c.
Captain	Reed, J. G. O.	S. C.
Deputy	Reed, H.	12th Gurkha Rifles
Ensign	Rees, H. A.	C. S.
Platoon Leader	Rees, H. M.	Comdg. Malakand Force
Captain	Reister, J. H.	R. A.
Captain	Reiss, A. H. T.	1st Madras Pioneer Bn.
Ensign	Reiss, F. P. P.	1st Lancashire H. C.
Major	Reiss, H.	R. A.
Major (Retd.)	Reiss, R. G. P.	10th Sikh
Captain	Reid, F. G. M.	Madhessex Regt.
Ensign	Reid, J. F.	Gloucestershire Regt.
Ensign	Reid, J. A. M.	24th Gurkha Rifles
Deputy	Reid, J. F. M.	14th Gurkha Rifles
Ensign	Reid, C. F.	1st Bombay Vol. Rifles
Deputy	Reid, S. B. C.	Comdg. Southern Dist.
Major	Reid, W. H.	11th Hussars
Captain	Reid, R. F.	Oxfordshire L. I.
Major	Reid, C. F.	R. F.
Captain	Reid, F. F.	1st Essex Rifles
Deputy	Reid, A. F.	R. F.
Captain	Reid, G. C. F.	2nd Lancers Infantry.

ORDINARY MEMBERS (Contd.)

Corps, &c.	Rank.	Name.	Corps, &c.
	Captain ...	Saunders, A. R.	2nd Lancers H. C.
1 Gurkha Rifles	Colonel ...	Saunders, M. W.	R. A., A. A. General.
	Lieutenant ...	Sawyer, G. H.	23rd Punjab Pioneers.
dg. Malakand Fc	Lt.-Colonel, c. i. r., D.S.O.	Scallan, R. I.	23rd Bombay Rifles.
	Colonel, c.B. ...	Scott, C. H.	R. A.
Madras Pioneers	Lt.-Colonel, c.B. ...	Scott, W. A.	Gordon Highlanders.
Lancers H. C.	Lieutenant ...	Scott-Elliott, C. R.	4th Madras Pioneers.
	Major ...	Serise Dickens, S. W.	2nd Highland L. Infy.
Sikhs.	Major ...	Searle, C. T. A.	36th Sikhs.
essex Regt.	Major ...	Selwyn, C. H.	12th Bengal Cavalry.
estershire Regt.	Captain ...	Senior, H. W. R.	20th Punjab Infantry.
Gurkha Rifles	Major ...	Sewell, J. H.	Retired.
Gurkha Rifles	Major ...	Shadwell, L. J.	D. A. A. G. for Instn.
arma Vol. Rifles	Major ...	Shakespeare, L. W.	Assam Military Police.
g. Southern Dr bund.	Lt.-Colonel ...	Shaw, G. J.	6th Madras Infantry.
Hussars.	Major ...	Shea, J. S. M.	15th Bengal Lancers.
shire L. I.	Lt.-Col., D.S.O., M.B.	Shearer, J.	I. M. S.
	Lt. Colonel ...	Sherard, R. W.	6th Bombay Cavalry.
shire Fus	Captain ...	Sherwood, H. J.	R. E.
	Major, D.S.O.	Shore, O. B. S. F.	18th Bengal Lancers.
ombay Infantry.	Lieutenant ...	Short, P. H.	Gloucestershire Regt.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Lt.-Colonel ...	Showers, H. L. ...	S. C.
Esquire ...	Shubrick, R. L. ...	Supdt., Central Jail.
Captain ...	Sillery, J. J. D. ...	25th Bombay Rifles.
Lt.-Colonel ...	Simpson, C. N. ...	R. A.
Lt.-Colonel ...	Simpson, C. R. ...	Middlesex Regt.
Major-Genl., C.B. ...	Simpson, G. ...	Comdg. Mandalay Dist.
Lt.-Colonel ...	Simpson, G. G. ...	R. A.
Lieutenant ...	Simpson, W. H. ...	33rd Burma Infantry.
Lt.-Colonel ...	Sinclair, H. M. ...	R. E.
Major, M.L. ...	Skinner, B. M. ...	R. A. M. Corps.
Captain ...	Skinner, F. St. D. ...	2nd Royal Sussex Regt.
Captain ...	Smith, A. Le F. ...	2nd Rajput Infantry.
Captain ...	Smith, F. A. ...	2nd Rajput Infantry.
Esquire ...	Smith, H. W. ...	Supdt. of Telegraphs.
Major, V.C., C.I.E. ...	Smith, J. Manners ...	S. C.
Major ...	Smith, T. H. ...	12th Bengal Cavalry.
Lieutenant ...	Smith-Rewse, G.B.W. ...	4th Punjab Infantry.
Major ...	Smyth, V. S. ...	R. Warwickshire Regt.
Captain ...	Soady, G. J. F. M. ...	19th Punjab Infantry.
Major ...	Southey, R. ...	30th Baluch Infantry.
Major ...	Spankie, G. T. ...	Late Oudh L. Horse.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Captain ...	Spence, A. H. O. ...	C. I. Horse.
Lt. Colonel ...	Spencer, D. B. ..	I. M. S.
Surgn.-Genl., C.B. M.D.	Spencer, L. D. ...	I. M. S.
The Ven'ble Arch- deacon.	Spens, A. N. W. ...	Eccles. Establt.
Colonel ...	Spratt-Bowring, F. T. N.	R. E.
Major ...	Stainforth, L. C. H. ...	38th Dogras.
Major, D.S.O. ...	Stanton, H. E. ...	Asst. Mily. Secy., Bombay.
Colonel ...	Stawell, G. D. ...	Dir. of Mily. Edn. in India.
Maj.-Genl., K.C.I.E., C.B.	Stedman, Sir E. ...	S. C.
Lieutenant ...	Steel, R. A. ...	17th Bengal Lancers.
Major ...	Stevens, C. ...	S. C.
Lt.-Colonel ...	Stevens, C. F. ...	15th Madras Infantry.
Colonel ...	Stevens, G. M. ..	R. A.
Major ...	Stevens, M. ...	13th Rajput Infantry.
Captain ...	Stevens, N. M. C. ...	21st Madras Pioneers.
Captain ...	Stevens, S. R. ...	33rd Burma Infantry.
Lieutenant ...	Stewart, H. ...	4th Infantry H. C.
Captain ...	Stewart, J. A. ...	7th Rajput Infantry.
Major ...	Stirling, W. G. H. ...	2nd Madras Infantry.
Br.-General ...	Stopford, A. B. ...	R. A.
Captain ...	Stotherd, E. A. W. ...	4th Lancers H. C.

ORDINARY MEMBERS--(Contd.)

Rank.		Name.		Corps, &c.
Major	...	Strachan, E. A.	...	Royal Luns. Fus.
Captain	...	Strachey, B.	...	S. Corps.
Major	...	Strachey, J.	...	11th Rajput Infantry.
Major	...	Strachey, R. J.	...	D A. Q. M. General.
Major	...	Strange, R. G.	...	R. A.
Captain	...	Strick, J. A.	...	1st Shropshire L I.
Major	...	Strickland, P. C. H.	...	I. M. S.
Major	...	Strickland, W. A. W.	...	Deputy Commissioner.
Lt.-Colonel	..	Stuart, C. J. L.	...	2nd Punjab Cavalry.
Major	...	Stuart, R. C. O.	...	R A.
Lt.-Colonel	...	Sturges, W. E.	...	Northumberland Fus.
Lt.-Colonel	...	Suart, W. H.	...	R. A.
Major	...	Sutton, H. G.	...	27th Madras Infantry.
Lt.-Colonel	...	Swaine, A. T.	...	Royal Irish Rifles.
Captain	...	Swales, W. H.	...	Punjab Light Horse.
Captain	...	Swanston, C. O.	..	18th Bengal Lancers.
Major	...	Swayne, E. J. E.	...	16th Rajput Infantry.
Captain	...	Sweet, E. H.	...	2-2nd Gurkha Rifles.
Captain	...	Sykes, P. M.	...	2nd Dragoon Guards.
Major, D.S.O., M.B.		Sykes, W. A.	...	I. M. S.
Captain	...	Sykes, W. E.	...	Lancashire Fus.

ORDINARY MEMBERS—(Contd).

Rank.	Name.	Corps, &c.
Major ...	Symonds, G. D. ...	R. A.
Lieutenant ...	Tahourdin, S. M. ...	12th Bengal Cavalry.
Lieutenant ...	Tandy, E. A. ...	R. E.
Major, D.S.O. ...	Tanner, J. A. ...	R. E., D. A. A. General.
Captain ...	Tarte, B. R. K. ...	East Kent Regt.
Major, D.S.O. ...	Taylor, H. N. ...	30th Burma Infantry.
Surgeon-General, C.B., M. D., K.H.P.	Taylor, W. ...	Dir. Genl., A. M. S.
Lt.-Col., C.I.E. ...	Temple, R. C. ...	S. Corps.
Lieutenant ...	Temple, W. A. M. ...	Gloucestershire Regt.
Major ...	Templer, C. B. ...	19th Bengal Lancers.
Major ...	Templer, H. ...	5th Punjab Cavalry.
Captain ...	Templer, J. M. ...	B. B. & C.I.Ry. V. Rifles.
Captain ...	Tennant, E. ...	3rd Lancers H. C.
Lt.-Colonel, D.S.O. ...	Teversham, R. K. ...	3rd Madras Infantry.
Captain ...	Thackeray, H. J. ...	Highland L. I.
Captain ...	Thompson, H. A. ...	2nd Connaught Rangers
Vety.-Col., C.B. ...	Thomson, H. ...	P. Vety. Officer in India
Major ...	Thomson, W. D. ...	Asst. JudgeAdvoc. Genl.
Esquire ...	Thorburn, S. S. ...	C. Service.
Major ...	Thring, R. H. D. ...	1st Madras Lancers.
Captain ...	Thuillier, H. F. ...	R. E.

ORDINARY MEMBERS—(Contd.)

Rank.		Name.		Corps, &c.
Colonel	...	Thurburn, J. W.	...	R. E.
Major	...	Thwaytes, E. C.	...	24th Madras Infantry.
Major, D.S.O.	...	Tighe, M. J.	...	27th Baluch Infantry.
Lieutenant	...	Tillard, F. B.	...	R. E.
Captain	...	Tod, J. K.	...	D. A. Q. M. Genl., I. B.
Lt-Colonel	...	Tonnochy, V. C.	...	3rd Sikhs.
Major	...	Trevor, H.	...	15th Sikhs.
Captain	...	Tribe, C. W.	...	38th Dogra Infantry.
Lieutenant	...	Tringham, A. M.	...	Royal W. Surrey Regt.
Major-Genl., C.I.E.	...	Tucker, L. H. E.	...	S. Corps.
Captain	...	Tulloh, G. S.	...	Gloucestershire Regt.
Colonel	...	Turnbull, C. F. A.	...	Duke of Cornwall's L. I.
Colonel, C.B.	...	Turner, A. H.	...	S. Corps.
Captain	...	Turner, H. H. F.	...	2nd Bengal Lancers.
Major	...	Turner, J. G.	...	4th Bengal Lancers.
Captain	...	Turner, M. N.	...	Duke of Cornwall's L. I.
Captain	...	Tweddell, F.	...	28th Punjab Infantry.
Captain	...	Twisleton-Wykeham-Fiennes, H. E.	...	9th Lancers.
Lieutenant	...	Tylden-Patterson, E. C.	...	R. E.
Major-General	...	Tyler, T. B.	...	I. G. of Artillery in India.
Captain	...	Tyrrell, G. E.	...	R. A.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Major ...	Unwin, G. B. ...	1st Punjab Cavalry.
Esquire ...	Upcott, F. R. ...	P. W. D.
Captain, D.S.O. ...	Vallancey, H. d'E. ...	A. and S. Highlanders.
Major ...	Van-Straubenzee, C.H.C.	2nd Suffolk Regiment.
Lt.-Colonel ...	Vaughan, H. B. ...	7th Rajput Infantry.
Major ...	Vaughan, R. E. ...	Asst. D.G. of S. & Transport
Captain ...	Venables, C. J. ...	Gloucestershire Regt.
Br.-General ...	Ventris, F. ...	Comdg. Bombay Dist.
Captain ...	Vickers, H. ...	D. A. A. G. for Musky.
Lieutenant ...	Wace, E. G. ...	R. E. ...
Major-Genl, C.B. ...	Wace, R. ...	D. G. of Ordnance in India.
Major ...	Waldron, H. F. K. ...	16th Bengal Lancers.
Major ...	Walker, A. L. ...	R. A.
Captain ...	Walker, H. B. ...	Duke of Cornwall's L.I.
Captain, D.S.O. ...	Walker, J. D. G. ...	Royal Highlanders.
Colonel ...	Walker, J. N. ...	S. C. ...
Captain ...	Walker, W. G. ...	14th Gurkha Rifles.
Captain ...	Walker, W. R. ...	15th Madras Infantry.
Lt.-Colonel ...	Wallace, A. ...	27th Punjab Infantry.
Major ...	Wallace, W.R. P. ...	Gloucestershire Regt.
Lt.-Colonel ...	Waller, E. A. ...	R. E. ...

ORDINARY MEMBERS—(Contd.)

Rank.		Name.		Corps, &c.
Esquire	...	Wallis, B. G.	...	C. E., Supdg. Engr.
Captain	...	Walters, H. F.	...	24th Baluch Infantry.
Captain	...	Wanliss, C.	..	S. Lancashire Regt.
Captain	...	Wardell, W. H.	...	1-39th Garhwal Rifles.
Captain	...	Warden, A. W.	...	3rd Lancers H. C.
Captain	...	Warwick, C. S.	...	Devonshire Regiment.
Major	...	Watkins, L. G.	...	R. A.
Lt.-Colonel	...	Watkis, H. B. B.	...	31st Punjab Infantry.
Captain	...	Watling, F. W.	...	R. E.
Captain	...	Watson, C. G.	...	R. A.
Captain	...	Watson, E. H.	...	33rd Punjab Infantry.
Captain	...	Watson, H. D.	...	2-2nd Gurkha Rifles.
Captain	...	Watson, L. A.	...	31st Punjab Infantry.
Colonel	...	Watts, J. B.	...	S. C.
Major	...	Webster, T.	...	12th Bengal Infantry.
Captain	...	Weedon, F. F.	...	R. E.
Maj.-Genl., K. C. B., D.S.O.		Westmacott, Sir R.	...	Comdg. Mhow Dist.
Lt.-Colonel	...	Westmorland, C. H.	...	6th Jat Infantry.
Major, V.D.	...	Weston, E.	...	2nd Punjab Vol. Rifles.
Colonel	...	Wheatley, H. S.	...	2-3rd Gurkha Rifles.
Major	...	Whistler, A. E.	...	16th Rajput Infantry.

ORDINARY MEMBERS—(Contd).

Rank.	Name.	Corps, &c.
Lt.-Colonel ...	White, F. P. L. ...	5th Punjab Infantry.
Lt.-Colonel ...	White, J. G. ...	Middlesex Regiment.
Captain ...	White, W. E. ...	1st Brahman Infantry.
Major ...	Whittall, F. V. ...	1st Infantry H. C.
Major ...	Whyte, C. W. F. ...	17th Bombay Infantry.
Lt.-Colonel ...	Wickham, W. J. R. ...	S. C.
Lieutenant ...	Wigram, C. ...	18th Bengal Lancers.
Lt.-Colonel ...	Wilkieson, C. B. ...	Late R. E.
Lieutenant ...	Wilkinson, C. R. ...	2nd Sikhs.
Major ...	Willcock, S. ...	Liverpool Regt.
Colonel, K. C. M.O., D. S. O.	Willcocks, Sir J. ...	H. P.
Captain ..	Williams, C. S. ...	43rd Gurkha Rifles.
Major	Williams, F. T. ...	26th Madras Infantry.
Major ...	Williamson, C. V. W. ...	S. & Transport Officer.
Captain ...	Willoughby, M. E. ...	2nd Bengal Lancers.
Colonel, C. B. ...	Wilson, E. H. ...	S. C.
Colonel ...	Wilson, F. A. ...	S. C.
Colonel ...	Wilson, W. B. ...	D. J. Adv. General.
Major ...	Wimberley, C. I. ...	8th Bengal Lancers.
Major	Wingate, A. W. S. ...	14th Bengal Lancers.
Lt.-Colonel, C. I. E.	Wingate, G. ...	Ins. Gen. of S. & Transport.

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Rank.	Name.	Corps, &c.
Captain ...	Wintle, F. H. ...	30th Punjab Infantry.
Lt.-Colonel ...	Wintour, F. ...	Royal West Kent Regt.
Maj.-General, C.B., C.M.G.	Wodehouse, J. H. ...	Comdg. Secunderabad District.
Lt.-Colonel ...	Wogan-Browne, F. W. N.	3rd Hussars.
Lt.-General, K.C.B.	Wolseley, Sir G. B. ...	Commanding the Forces Madras.
Lt.-Colonel ...	Wood, E. J. F. ...	S. C.
Captain ...	Wood E. J. M. ...	6th Infantry H. C.
Captain ...	Wood, T. B. ...	R. A.
The Hon'ble, K.C.S.I.	Woodburn, Sir, J. ...	Lt.-Governor, Bengal.
Major ...	Woodyatt, N. G. ...	1-3rd Gurkha Rifles.
Colonel ...	Woolcombe, C. L. ...	A.A.Genl. for Musketry.
Lieutenant ...	Worsley, F. P. ...	W. Yorkshire Regiment.
Major ...	Wrench, A. J. C. ...	Late R. Welsh Fus.
Lt.-Col., D.S.O., M.B.	Wright, F. W. ...	I. M. S.
Major, D.S.O. ...	Wright, G. ...	R. A.
Major, D.S.O. ...	Wright, H. ...	Gordon Highlanders.
Maj.-Genl., C.S.I....	Wylie, H. ...	S. C.
Lt.-Colonel ...	Wylly, H. C. ...	Derbyshire Regt.
Lt.-Colonel ...	Wyndham, G. P. ...	16th Lancers.
Lieutenant ...	Wyness, J. P. ...	Calcutta Port Defence Vol. Corps.
Colonel, A. D. C. ...	Wynne, T. R. ...	Bengal-Nagpore Ry. V. Corps.

ORDINARY MEMBERS—(Contd.)

Rank.	Name.	Corps, &c.
Captain ...	Young, D. C. ...	1-4th Gurkha Rifles.
Colonel ...	Young, E. A. ...	S. C.
Captain ...	Young, F. de B. ...	6th Bengal Cavalry.
Colonel, c.B. ...	Young, G. F. ...	S. C.
Lt.-Colonel ...	Young, H. H. ...	S. C.
Major ...	Young, W. B. ...	9th Madras Infantry.
Major ...	Younghusband, F. E. ...	S. C.

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VOL. XXXI.

JANUARY 1902.

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THE CONQUEST OF JAVA.

BY CAPTAIN R. G. BURTON, 1ST INFANTRY, HYDERABAD CONTINGENT.

Although the great and moving drama which stirred Europe during the French Revolutionary wars and the Napoleonic era, did not directly affect India, in that the country itself was not made the scene of actual European contention, still some echoes of the hostilities of that epoch reached the East, and gave rise to momentous events.

Bonaparte, seeking, like Alexander, fresh worlds to conquer, had, when in Egypt, turned longing eyes towards that romantic land which fired his imagination with futile visions. But his prospects of Oriental Empire fell before the walls of Acre, although even his failure in the near East did not finally extinguish his hopes in that direction, which were quenched only in the snows of Russia. In the meantime French intrigue was at work and continued active towards the undermining of British influence in India, thus giving rise to conflicts with various native powers. The far-sighted policy of the illustrious Wellesley, Governor-General from 1798 to 1805, was mainly directed to the counteraction of French influence and French aggression. In Mysore arose the final war with Tipu Sultan, resulting in the overthrow of that potentate and the termination of his dynasty. With the same object in view the destruction of Tipu was followed by the war with the Marathas in 1803, when General Wellesley in the Deccan and Lake in Northern India completely subdued, for the time being, that corrupt and powerful confederacy, thus consolidating British power from the Ganges to the Godavery, and establishing the supremacy and prestige of England in that country on a firm basis.

The British arms being thus triumphant and security apparently ensured in Peninsular India, the Government was in a position to direct attention to enterprises beyond seas. Bourbon was taken

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from the French; Ceylon, Malacca, and the Spice Islands, in addition to their possessions on the mainland of India, were wrested from the Dutch; and in 1811 an expedition for the reduction of Java left Indian shores.

This expedition, under the command of Sir Samuel Auchmuty,

Composition of the expedition. — was composed as follows:—
ary force.

The army of invasion was divided into four brigades, namely —

The Advance, commanded by Colonel R. R. Gillespie.*

Right Flank Battalion	...	...	Major Miller.
Left Flank Battalion	...	...	Major Fraser.
Detachment, 89th Regiment	...	...	Major Butler.
Royal Marines	...	...	Captain Liardet.
Bengal Light Infantry Volunteer Battalion	...	...	Major Dalton.
Governor-General's Body Guard	...	...	Captain Gall.
Pioneers	...	...	Captain Smithwayte.
Horse Artillery	...	...	Captain Noble.
Detachment, 22nd Dragoons	...	...	Major Travers.

The Line, commanded by Major-General Wetherall.

Left Brigade.—Lieutenant-Colonel Adams.
H. M. 78th Regiment—Major Lindsey.

6th Battalion, Bengal Volunteers—Major
Rahan.
H. M. 69th Regiment—Lieutenant-Colonel
McLeod.

Right Brigade.—Colonel Gibbs.

H. M. 59th Regiment—Lieutenant-
Colonel McLeod.

5th Battalion, Bengal Volunteers—
Captain Griffiths.

H. M. 14th Regiment—Lieutenant-
Colonel Watson.

* *Note*.—Robert Rollo Gillespie had a remarkable career and was doubtless one of the ablest and bravest officers of his time. This campaign is worth relating if only to recall his name from undeserved oblivion.

He was born at Comber N. B. on 21st January 1760, and appointed Cornet in the 3rd Regiment, Irish Horse (now 6th Carabineers), on 25th April 1783. In November 1786 he contracted a clandestine marriage with the daughter of Thomas Taylor of Dublin. He fought a duel with Sir Jonah Barrington across a handkerchief, and shot his adversary dead, after which he was tried for murder and acquitted.

In 1792 he was promoted Lieutenant in the 20th Light Dragoons, and got his troop in 1794. He behaved with great gallantry in the West Indies, and was wounded in several places at Fort del 'Hospital. In 1796 he was promoted Major in the West Indies and shortly afterwards defeated eight desperadoes, who broke into his house and killed his servant. Gillespie, single-handed, killed six of them, and the remaining two fled after shooting at and wounding him.

He exchanged into the 19th Dragoons in India, and was appointed Commandant at Arcot, when, a mutiny occurring at Vellore, he galloped 15 miles to that place at the head of his regiment and galloper guns, blew in the gates of the fort, and killed or captured all the mutineers, thus releasing the survivors of the garrison from their perilous position. His services in the Java campaign are here related. After this he quarrelled with Sir Stamford Raffles, the Civil Governor, and in 1812 was moved to Meerut as Major-General.

In 1814 he commanded the Meerut Division in the campaign against Nepal, and was shot through the heart when assaulting a fort in Dehra Dun which beat off two attacks by the British troops. Like many other good soldiers he was a fine sportsman, and among other feats he speared a tiger on the Bangalore race-course.

There is a public monument to his memory in St. Paul's Cathedral.

The Reserve, commanded by Colonel Wood.

4th Battalion, Bengal Volunteers	...	Major Grant.
1st Battalion, 20th or Marine Regiment	...	Lieut.-Col. Loveday.
3rd Battalion, Bengal Volunteers	...	....
Flank Battalion	... ..	Major Yule.

Pioneers, Bengal Artillery, Royal Artillery, and Engineer Detachments. The whole under command of Sir Samuel Auchmuty, amounting to 324 officers, 123 native officers, 5,144 European rank and file, 5,530 native rank and file, 839 pioneers, lascars, etc. : total 11,960; but of these 1,200 were left sick at Malacca and 1,500 were sick on landing in Java.

FLEET EMPLOYED FOR THE EXPEDITION TO JAVA.

LINE OF BATTLE SHIPS.

<i>Scipion</i>	...	Rear-Admiral Stopford.
<i>Illustrious</i>	...	Commodore Broughton.
		Captain Festing.
<i>Minden</i>	...	Captain Hoare.
<i>Lion</i>	...	Captain Heathcote.

FRIGATES.

<i>Akbar</i>	...	Captain Drury.	<i>Hussar</i>	...	Captain Crawford.
<i>Doris</i>	...	" Lye.	<i>Drake</i>	...	" Harris.
<i>Nisus</i>	...	" Beaver.	<i>Phaeton</i>	...	" Pellew.
<i>President</i>	...	" Warren.	<i>Leda</i>	...	" Sayer.
<i>Bucephalus</i>	...	" Pelly.	<i>Caroline</i>	...	" Cole.
<i>Phaë</i>	...	" Hillyar.	<i>Cornelia</i>	...	" Edgell.
<i>Modeste</i>	...	" Elliot.	<i>Psyche</i>	...	" Edgumbe.

SLOOPS.

<i>Barracouta</i>	...	Captain Owen.	<i>Samarang</i>	...	Captain Drury.
<i>Hesper</i>	...	" Reynolds.	<i>Harpy</i>	...	" Bain.
<i>Hecate</i>	...	" Peachey.	<i>Procris</i>	...	" Mansell.
<i>Disher</i>	...	" Kelly.			

HONOURABLE COMPANY'S CRUISERS.

<i>Malabar</i>	...	Commodore Hayes.	<i>Vestal</i>	...	Captain Hall.
		Captain Maxfield.	<i>Ariel</i>	...	" Macdonald.
<i>Aurora</i>	...	" Watkins.	<i>Thetis</i>	...	Lieutenant Phillips.
<i>Mornington</i>	...	" Pearce.	<i>Psyche</i>	...	...
<i>Nautilus</i>	...	" Walker.			

Also fifty-seven transports and several gun-boats, amounting in all to one hundred sail.

The first division of the expeditionary force, under command of Colonel Robert Rollo Gillespie, set sail from Madras roads on April 18th, 1811, the remainder following a week later under Major-General Wetherall. During one of the violent hurricanes, to which these seas are subject, several vessels, including H. M. S. *Dover*, were driven on shore and lost, whilst in the second convoy 40 horses died of suffocation during a storm. The first rendezvous was at Penang, which was reached on

May 18th and 21st. At Malacca, the next port, the force was joined by the Bengal troops, and by Lord Minto, the Governor-General, and Sir Samuel Auchmuty.

On June 11th the expedition sailed for Singapore, and thence, after calling at High Islands and experiencing some very rough weather, passed round the coast of Borneo, and reached Point Sambar on July 20th. The fleet arrived at Bumpkin Island on the 30th, where a halt was made until the arrival of Colonel Mackenzie, who had been detached to reconnoitre for a landing-place, and who returned on August 2nd with the requisite information. It having been decided to effect a landing at Chillingching, 10 miles east of Batavia, the fleet again set sail, and having made Cape Carawang on the evening of August 3rd, ran into the mouth of the Marandi river next morning and anchored off the point selected for the descent.

Before proceeding further with this narrative, it is advisable to give some account of the country which was to be the scene of the approaching conflict.

The island of Java.

This island, one of the most considerable and certainly the most important of Malaysia, had been occupied by the Portuguese, but had been taken from them by the Dutch, under whose rule it had formerly attained a condition of great prosperity which had declined with the decay of the Dutch nation.

On the incorporation of Holland with the Napoleonic system, Java passed under the domination of the French, and thus became an object for British conquest which, in view of the possession of the mastery of the seas, was an undertaking that could be carried out with comparative facility. There was, however, some danger from the uncertain nature of the tempestuous seas in which the Malay archipelago is situated, whilst the torrid climate of those equatorial latitudes enhanced the risk of transporting troops in the small vessels which were in use at that period.

The island is crossed from east to west by the great volcanic Blue Mountain range, whose craters slumber but are not extinct, and whose slopes are clad with almost impenetrable forest. On the south the land rises abruptly from the sea, but it slopes gently down on the northern side where it was joined to the mainland of Borneo in comparatively recent geological times. In the vicinity of this northern coast, which is the populous district, the country is flat and the forest has been cleared, giving place to open marshland, intersected by numerous streams and canals, and laid out in rice and tobacco fields and coffee plantations. A great part of the southern portion of the island is abandoned to the wild beasts which wander in peace over the untrodden solitudes of dense and primeval jungle.

From Bantam to the eastern extremity of the island, a military road, 700 miles in length, had been constructed by General Daendels, the able predecessor of General Janssens, who was in 1811 Governor and Commander-in-Chief of Java and its dependencies in the neighbouring islands of Sumatra, Borneo, and Madura.

Batavia, the chief town, was surrounded by a nearly stagnant ditch ; every street was intersected by canals, and the whole neighbouring country covered with rice-fields. The fortifications had been destroyed and the troops withdrawn to Weltevreden and Cornelis owing to the unhealthiness of the capital. The country was well-watered by rivers and canals, some crossed by stone and wooden bridges, and some by bamboo rafts constructed like flying bridges on which vehicles and artillery could be conveyed across expeditiously.

This extensive area, 630 miles in length and 150 in extreme breadth, was inhabited by a variety of races, amounting in all to some five million people. The European colonists and the half-caste descendants of Portuguese and Dutch settlers formed a small proportion of these numbers, and there were 100,000 Chinese, subject to taxation according to the length of their pigtails. The residue of the population consisted of Javanese and Malays, the latter sub-divided into various tribes who, in the city of Batavia, lived in separate "campongs," each under a chief who was responsible for their behaviour. The Malays are an indolent race, treacherous and vindictive, and addicted to assassination, but bold and enterprising navigators. The great mass of the population consisted of Javanese inhabiting the interior and cultivating the land, a physically fine race, possessed of some warlike qualities.

The force at the disposal of General Janssens amounted to 13,000 regular troops, but no exact information is forthcoming with regard to their composition. There was at least one regiment of voltigeurs, lately arrived from Europe. There was also a proportion of cavalry, and a practically unlimited supply of ordnance and military stores. It seems probable, judging by the comparatively feeble resistance they offered, that the greater part of the force consisted of natives, disciplined and officered by Europeans.

Ten thousand of these were in the fortified camp at Cordelis, whilst the remainder formed an advanced post at Weltevreden between that place and Batavia.

The squadron having anchored off the point selected for the descent, a landing was effected at Chillingching, 10 miles to the east of Batavia, on the morning of August 4th. The place of debarkation of the troops was protected by vessels placed in suitable positions, but the landing was unopposed ; and Colonel Gillespie's force, which was the first to disembark, took up a position on the road to Cornelis, covering the landing of the remainder of the troops, which occupied the road to Batavia. Before night-fall the advanced posts were pushed on 2 miles from the landing-place, and the troops were formed in two lines,—one fronting Batavia and one Cornelis. During the night a patrol of the enemy galloped into the outposts on the Batavia road, receiving the fire of a picquet and two six-pounders, by which an officer and several men were killed.

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This extensive area, 630 miles in length and 150 in extreme breadth, was inhabited by a variety of races, amounting in all to some five million people. The European colonists and the half-caste descendants of Portuguese and Dutch settlers formed a small proportion of these numbers, and there were 100,000 Chinese, subject to taxation according to the length of their pig-tails. The residue of the population consisted of Javanese and Malays, the latter sub-divided into various tribes who, in the city of Batavia, lived in separate "campongs," each under a chief who was responsible for their behaviour. The Malays are an indolent race, treacherous and vindictive, and addicted to assassination, but bold and enterprising navigators. The great mass of the population consisted of Javanese inhabiting the interior and cultivating the land, a physically fine race, possessed of some warlike qualities.

The force at the disposal of General Janssens amounted to 13,000 regular troops, but no exact information is forthcoming with regard to their composition. There was at least one regiment of voltigeurs, lately arrived from Europe. There was also a proportion of cavalry, and a practically unlimited supply of ordnance and military stores. It seems probable, judging by the comparatively feeble resistance they offered, that the greater part of the force consisted of natives, disciplined and officered by Europeans.

Ten thousand of these were in the fortified camp at Cordelis, whilst the remainder formed an advanced post at Weltevreden between that place and Batavia.

The squadron having anchored off the point selected for the descent, a landing was effected at Chillingching, 10 miles to the east of Batavia, on the morning of August 4th. The place of debarkation of the troops was protected by vessels placed in suitable positions, but the landing was unopposed; and Colonel Gillespie's force, which was the first to disembark, took up a position on the road to Cornelis, covering the landing of the remainder of the troops, which occupied the road to Batavia. Before night-fall the advanced posts were pushed on 2 miles from the landing-place, and the troops were formed in two lines, — one fronting Batavia and one Cornelis. During the night a patrol of the enemy galloped into the outposts on the Batavia road, receiving the fire of a picquet and two six-pounders, by which an officer and several men were killed.

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The horse artillery and cavalry were landed on the 5th, and the position of the army was advanced in the direction of Batavia, Colonel Gillespie remaining on the Cornelis road beyond Chillingching, whilst the reserve halted at the landing-place to support either advance as necessity arose. Stores and provisions for ten days were landed, all private followers, except one to each officer, being taken for the public service, so that all those who did not bear arms were obliged to carry a load.

It was the intention of the Commander-in-Chief to make a feint in the direction of Batavia, thus drawing off the enemy's attention from the Cornelis road, along which the main advance would then be made. On the morning of the 6th Colonel Gillespie and his staff reconnoitred the road and country towards Batavia as far as Anjole Point, 2 miles from the capital, and found the far side of the river occupied by the enemy's vedettes. The advance was thereupon countermarched and a new position taken up at Tanjong Priock, 6 miles from the capital, whilst the reserve relieved it beyond Chillingching. Finding his advance unopposed and the enemy inactive, the Commander-in-Chief determined to move direct on Batavia, and on 7th August the infantry of Colonel Gillespie's brigade crossed the Anjole river at 10 P.M. by a bridge of boats that had been rowed in after dark for that purpose under the direction of the officers of the *Leda*, *Hesper*, and *Procris*. A part of the horse artillery and the Bengal Light Infantry battalion were drawn up behind the banks to protect the passage.

But, although the nature of the country offered great facilities for defence, no opposition was encountered, and by midnight the whole party had crossed, and were posted before dawn among the canals and rivulets within a mile of the town. The line was in the meantime moved towards the river. The following morning Batavia was entered without opposition, the enemy's scouts galloping off in the direction of Weltervreden. The British flag was then hoisted at Crane Wharf and a royal salute fired from the shipping. A number of guns and a quantity of naval and military stores were taken in the castle and in the arsenals on the wharf.

As an attack might be expected at night, the troops were fallen in in the grand square in front of the town-house at 11 P.M., just as a column of the enemy appeared and opened fire on a picquet at the bridge on the Weltervreden road, where the draw-bridge was raised only just in time. Firing now took place all round the town, but Colonel Gillespie moved out with a force on the enemy's flank and obliged them to retire. Several of the enemy were killed, but there were no casualties on the British side, as the troops had been ordered to use the bayonet only, and so did not expose themselves to the fire of the French. Next morning the garrison was joined by some horse artillery and a troop of dragoons. Thus was the capital abandoned to the invaders almost without a shot fired in its defence.



At the remainder of the British army was crossing the Anjol river on the morning of August 10th, of Weltervreeden. Colonel Gillespie* marched with his towards Weltervreeden, where he arrived at daybreak and he cantonment deserted. The enemy had retreated a mile in the direction of Cornelis with their left on the great river in right on the Slokan. The road was blockaded and swept of the hostile guns, whilst from a wood, which ran along both of the road, the enemy's infantry kept up a galling fire. They were engaged by three British pieces, and the sharpshooters were led along the whole front to occupy the enemy's attention and his flanks were turned, and the villages he was in possession of were fired. A detachment of the 89th Foot under Major Butler charged the hostile guns and captured them at the point of the net, and the French troops fled towards Cornelis, pursued up to very batteries of that place by a squadron of the 22nd Dragoons or Colonel Gillespie.

This action was of importance, as it secured to the invaders the obtrusive cantonment of Weltervreeden and a *point d'appui* within striking distance of Cornelis. The British loss was one officer and 16 men killed, and seven officers and 66 men wounded. The enemy's loss amounted to some 500 men and four guns, whilst a large quantity of stores and over 300 pieces of ordnance were found abandoned in the cantonment.

After this action a position was taken up within 800 yards of the enemy's outworks at Cornelis. General Janssens had here concentrated his whole force in a strongly entrenched camp, defended by 280 pieces of cannon, between the river Jacatra and the Slokan, both of which were unfordable. "This position was shut up by a deep trench, strongly palisaded; seven redoubts and many batteries, mounted with heavy cannon, occupied the most commanding ground within the lines; the fort of Cornelis was in the centre; and the whole of the works were defended by a numerous and well-organised artillery." (Sir S. Auchmuty's Despatch.)†

* It is related that "the quarters occupied by Colonel Gillespie were kept by a Frenchman, who had been a menial servant of General Daendels. This man poisoned the morning coffee, and the Colonel and his Staff, who had taken it, were all seized with most violent pains and vomitings. The fellow had a cup poured down his own throat, though very much against his will, and it produced the same effect on him."

Other more serious matter which then engaged every person prevented a further examination into this abominable act of which the motives were but too obvious—at a moment when the fellow well knew that we were going into action. He afterwards got off to America."

† NOTE.—A copy of the orders for the defence of this position, issued by the French General Jumel, is before me. It is remarkable that, although at the commencement of his instructions the General states that the place is "capable of a most desperate defence," almost the whole orders are taken up with dispositions for retreat "in case the enemy might introduce himself into the place and maintain himself there"—a fact which shows the poor spirit in which the defence was undertaken, and the want of confidence of the General either in himself or his troops.

Whilst the remainder of the British army was crossing the Anjol river on the morning of August 10th, Colonel Gillespie* marched with his brigade towards Weltervreeden, where he arrived at daybreak and found the cantonment deserted. The enemy had retreated a mile farther in the direction of Cornelis with their left on the great river and their right on the Slokan. The road was blockaded and swept by four of the hostile guns, whilst from a wood, which ran along both sides of the road, the enemy's infantry kept up a galling fire. The guns were engaged by three British pieces, and the sharpshooters were extended along the whole front to occupy the enemy's attention whilst his flanks were turned, and the villages he was in possession of were fired. A detachment of the 89th Foot under Major Butler now charged the hostile guns and captured them at the point of the bayonet, and the French troops fled towards Cornelis, pursued up to the very batteries of that place by a squadron of the 22nd Dragoons under Colonel Gillespie.

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Some time was occupied by the invaders in landing a battering train, and it was not until the night of the 20th August that ground was broken within 600 yards of the enemy's works. Three batteries of guns, howitzers, and mortars were constructed for the bombardment, and guns were placed in position on the morning of 22nd August. The enemy, seeing the progress that was being made by the besiegers, now made a sortie, attacking the batteries in front, whilst a column with four horse artillery guns made a detour to attack the British left. They gained temporary possession of one of the batteries, whilst the working parties ran to their arms, but were immediately expelled by a part of the 59th and 78th regiments, and the hostile column retired after firing a few rounds from their guns, not awaiting the attack of the 69th which advanced against them. In this action six officers were killed and mortally wounded and four wounded, and about 80 men killed and wounded, whilst the enemy suffered heavy loss.

The artillery duel was now continued, and a heavy cannonade proceeded throughout the 24th and 25th, causing considerable loss on both sides. On the British side five hundred seamen assisted at the batteries, and "the handy man" was doubtless as useful as he has proved to be on many occasions since. It became evident to Sir Samuel Auchmuty that a frontal attack could not be carried out, and it was therefore determined to surprise the enemy's right and enter his position by the narrow bridge over the Slokan on that flank, whilst auxiliary attacks were made simultaneously on his front and rear. Both the plan and the execution of the main attack were entrusted to Colonel Gillespie.

Before daybreak on August 26th Colonel Gillespie's column, supported by a second body under Colonel Gibbs, and guided by a sergeant who had deserted from the enemy, crossed the Slokan and proceeded by a path through the jungle in the direction of the enemy's lines. The distance to be traversed was some 2,000 yards, and shortly before sunrise the head of the column arrived near the enemy's works, when it was discovered that they had lost touch with the support. The day was fast approaching. Already a faint light diffused the eastern sky, and the mists of night were beginning to disperse before the coming dawn. The success of the enterprise depended upon immediate action. A retreat would entail discovery and the failure of the expedition, but the prospect of attacking a fortified position, held by 13,000 men and armed with 300 cannon, with a handful of men, was sufficient to daunt the boldest heart.

But in Colonel Gillespie, the bravest of the brave, the column had a leader whom no dangers could appal and no difficulties discourage. Placing himself at the head of his little band, and trusting that Colonel Gibbs would arrive in time to support him, he led the way against redoubt No. 3 (*vide* map), surprising and killing every man of the enemy's picquet, capturing the redoubt, destroying its garrison, and seizing the passage over the Slokan which formed the key to the hostile position.

This bridge was swept by a storm of grape from the enemy's batteries which flanked it, and was defended in addition by four guns, whilst the passage was so narrow as to admit of only two men abreast, and the front was protected by *trous de loup* and other obstacles.

But the British soldiers were not to be denied; fired by their success and inspired by their leader they pressed on across the bridge with the bayonet; and, notwithstanding the vastly superior force of the enemy and the tremendous fire of grape and musketry, captured redoubt No. 4 which, like that already taken, was armed with twenty 18-pounders and several 24 and 32-pounders, whilst the trenches were filled with musketeers.

At this moment Colonel Gibbs arrived at the head of the grenadiers of the 14th, 59th and 69th regiments, and carried redoubt No. 2, where the enemy fired a powder-magazine. An eye-witness gives the following description of this catastrophe:—"A dreadful explosion took place in this redoubt by the blowing up of a powder-magazine, which occasioned the loss of many lives. A great number of shells and rockets were fired by this means, and a sulphureous blast of mingled ashes, smoke, and fragments of every kind, broke upon us like a volcano, stunning all around, both friends and foes. This catastrophe was followed for a minute by an awful silence. The captains of each of the grenadier companies, and many others, all found a death, but few a grave! Numbers of the enemy also were destroyed, and the ground was strewn with mangled bodies and scattered limbs of friends and foes, blended together in a horrible state of fraternity. Colonel Gibbs and several other officers were thrown by the shock to a considerable distance, but fortunately without sustaining any material injury. This magazine is reported to have been fired by two captains in the French service, named Muller and Osman, both of whom perished in the explosion. Here Brigadier Jauffret was taken prisoner by Colonel Gillespie in person."

All the hostile batteries were now captured in succession, and the enemy's park and reserve were taken by a charge of the 59th, a party of whom also repulsed the cavalry who were threatening to charge. A last rally was made at Fort Cornelis, but nothing could withstand the onslaught of the British bayonets, and the enemy broke and fled in all directions.

In the meantime two other attacks were being carried out—one on the opposite side of the Great River by the column under Major Yule at Campong Malayo, which, finding the bridge in flames, could only fire with their artillery on the retreating enemy; the other under Colonel William McLeod, who carried redoubt No. 1, but himself fell at the moment of victory.

The dragoons now coming up, Colonel Gillespie mounting a horse which he cut from one of the enemy's guns, headed the cavalry and by a fine charge dispersed the remnant of the defenders. He then pursued them for over 15 miles, nearly half way to the strong post of Buitenzorg.

The flying foe attempted to rally at Campong Macassar, but the cavalry, led by Colonel Gillespie, charged in sections through the different avenues and bore down all opposition. Over 6,000 prisoners were taken in the pursuit, including three general officers, 34 field officers, 70 captains, 150 subaltern officers, and many thousands were killed and wounded. Gillespie with his own hand captured two generals and slew a colonel in single combat. 280 pieces of ordnance and several stand of colours were taken in the works at Cornelis. The British loss in this and the preceding actions is shown in the subjoined table:—

Date.	KILLED.			WOUNDED.			MISSING.		Total.	REMARKS.
	European officers.	European men.	Natives.	European officers.	European men.	Natives.	European.	Natives.		
1811.										
August 10th ...	1	16	...	8	70	3	...	1	99	Of the officers wounded, 13 subsequently died of their wounds.
„ 12th ...	...	...	...	...	3	...	...	...	3
„ 15th ...	...	...	...	...	1	...	...	...	1
„ 20th	1	1	In addition 11 seamen and 4 marines were killed; 6 naval and marine officers, 29 seamen, and 20 marines were wounded; 3 seamen missing.
„ 22nd ...	2	17	7	8	39	22	1	...	96	
„ 24th ...	1	2	1	1	8	4	...	...	17
„ 25th ...	...	...	...	...	...	1	...	...	1
„ 26th ...	11	65	20	44	426	93	10	1	670	
Total ...	15	100	28	61	548	123	11	2	888	

NAMES OF OFFICERS KILLED AND MORTALLY WOUNDED BETWEEN 10TH AND 26TH AUGUST 1811.

22nd Dragoons.—Lieutenant Hutchins.

Royal Artillery.—Lieutenants Paston, Farnaby, Driffield.

14th Regiment.—Captains Kennedy, Rawlins; Lieutenants Coghan, McKenzie.

59th Regiment.—Captain Olphert; Lieutenants Waring, Lloyd, Litton, McPherson, Sampson; Ensign Wolfe.

69th Regiment.—Lieutenant-Colonels Clarges, McLeod; Captain Ross; Lieutenant Hipkins.

78th Regiment.—Lieutenant-Colonel Campbell; Lieutenant Monro.

Bengal Native Infantry.—Captain Shaw; Lieutenants Murrall, McDonald; Ensign Pringle.

Madras Pioneers, etc.—Lieutenants Shephard, Ferguson; Ensign McLeod.

After the defeat of his army General Janssens, who escaped with difficulty from Cornelis, fled in an easterly direction. A detachment was at once sent by sea to intercept him at Cheribon, which surrendered at the first summons. General Janssens had passed through two days previously, but his second-in-command, General Jumel, arriving with other officers after the occupation of the fort by British troops, was taken prisoner.

The remnant of the army from Cornelis, consisting of about 50 officers, 200 Europeans and 500 natives, principally cavalry, finding themselves cut off, surrendered, and thus the whole country west of Cheribon was cleared of the enemy, whilst the Raja of Madura took the British side, and captured such hostile garrisons as were within his territory.

In the meantime General Janssens had continued his flight to Samarang, which was invested by Sir Samuel Auchmuty and evacuated by the enemy on the night of 12th September.

The French General had now retired to a position on some steep and rugged hills at Jatty in the vicinity of Samarang with a force of some 7,000 pikemen, 1,000 muskets, and a few field pieces. Against this position the British, amounting to 1,600 men, advanced with an impetuosity which it was impossible to resist. The enemy evacuated their position, threw down their arms, and fled in all directions. General Janssens escaped to the fort of Salatiga, but capitulated a few days later, and formally surrendered Java with its dependencies to the British.

Surrender of Java.

Thus ended an enterprise which was productive of so much glory to the British arms and which might have entailed great profit to the British Empire. In his despatch to the Earl of Liverpool, Secretary of State for War, Lord Minto remarked:—"An Empire, which for two centuries has contributed greatly to the power, prosperity, and grandeur of one of the principal and most respected States of Europe, has been thus wrested from the short usurpation of the French Government, added to the dominion of the British Crown, and converted from a seat of hostile machination and commercial competition into an augmentation of British power and prosperity..... Your Lordship will, I am sure, share with me the gratifying reflection that by the successive reduction of the French islands and Java, the British nation has neither an enemy nor a rival left from the Cape of Good Hope to Cape Horn."

Amid the clash of arms then resounding in Europe, and especially in Spain where that illustrious soldier who commenced his great career in the east was fighting for the liberties of a continent, amid such great noise of war this brilliant enterprise received but little

notice.* History generally accords it but a few paragraphs, and it has been consigned to comparative oblivion.

But it deserves more than a passing notice, and had politics not nullified the results of war, which had been obtained at the cost of so much bloodshed, this island, which, under British administration, would assuredly have prospered and not sunk into the obscurity which now surrounds it, might this day be one of the brightest jewels in the British Crown.

With a generosity that was perhaps mistaken, somewhat similar to that which has in our own time produced such direful results in South Africa, Java was restored to the Dutch at the general peace of 1815. As regards its administration during the brief term of years that it remained a British possession, the Historian Heeren may well be quoted:—"During the five years of British possession so mild and wise an administration was exercised that after the restoration it seems to have been difficult for the natives and Europeans to accustom themselves again to Dutch dominion. During the short time it was in possession of Britain a clearer light was shed over this remarkable island than was done during the two whole centuries of the dominion of Holland."

"History is philosophy teaching by example," and from history may be drawn examples for guidance in the great affairs, both of war and politics. National characteristics appear to remain much the same during existence of an empire, and we have in our own time seen the disastrous effects of the Dutchman's rule in another land, where, sunk in the obscurity of mediæval ideas, an ignorant people has developed into a narrow-minded, corrupt, and retrogressive nation. Apart from other considerations, the elimination of such

* NOTE.—It is interesting to note the paucity of rewards which were given for military service in those days. For this campaign the Prince Regent conferred medals upon officers in accordance with the following rules:—

- "1. Medals are only to be bestowed upon occasions of great importance, or of peculiar brilliancy.
 - "2. Medals of a larger size are conferred upon general officers, including brigadiers, who wear them suspended by a ribbon round the neck. Medals of a smaller size are bestowed upon colonels and officers of the senior ranks.
 - "3. No general or other officer is considered to be entitled to receive a medal, except he has been personally and particularly engaged upon the occasion, in commemoration of which this distinction is bestowed, and has been selected by the commander of the forces upon the spot, and has been reported by him to have merited the distinction, by very conspicuous services.
 - "4. The commander of the forces (after he shall have been informed of the intention of Government to bestow medals) shall transmit to the Secretary of State for the War Department, and the Commander-in-Chief, returns signed by himself, specifying the names and ranks of those officers whom he shall have selected as particularly deserving.
 - "5. The commander of the forces, in making this selection of the most deserving officers, will consider his choice restricted to the undermentioned ranks.
- (N.B.—Field officers and staff), as it is found to be absolutely necessary that some limitation should be put upon the granting of this honour."

Lord Minto, Governor-General of India, erected a monument at his own expense to the memory of those brave men, who, in the short but arduous war of Java, purchased the triumph of their country, and perfected their own title to immortal fame, by illustrious death in the very bosom of victory." (Order in Council.)

baneful states and the destruction of such harmful and effete politics constitute a service to mankind and to the progress of the human race.

After the surrender of General Janssens, Mr. Raffles was appointed Lieutenant-Governor of Java, and

Subsequent operations. Sir Samuel Auchmuty with the greater part of the troops returned to India, leaving the command of the remaining British forces to Colonel Gillespie. Before closing this narrative it may not be uninteresting to trace for a few more steps towards its glorious close, now rapidly approaching,* the career of the brave soldier to whose ability, energy, and gallantry the successful issue of the Java expedition was mainly due, and who conducted the subsequent operations that ensured the peaceful settlement of the island.

The island and its dependencies had, under Dutch rule, been in a somewhat turbulent state and several of the native princes took advantage of the conflict between the European powers to throw off the foreign yoke and declare their independence. Among these were the Sultan of Palimbang in Sumatra, who massacred the European colonists, and committed many other atrocities, and the Sultan of Mataram, who conspired to drive the Europeans from Java, whilst a fanatical mullah, aspiring to divine powers, raised the standard of rebellion in the vicinity of Batavia. The forces of the latter, amounting to over 2,000 musketeers, were easily dispersed by a bayonet charge of a detachment of the 59th Regiment, but the two Sultans required more serious attention, especially as any success on their part would in all probability be followed by a general rising of the Malays and Javanese.

Immediately on receipt of the news of the massacre of the European and native inhabitants of the Dutch factory at Palimbang, an expedition to Palimbang. expedition was fitted out at Batavia and despatched under Colonel Gillespie on 20th March 1812. This force consisted of three companies, 59th regiment, five companies, 89th regiment, and some details of Madras and Bengal artillery and infantry, conveyed in four transports and escorted by seven ships of war and gunboats.

The passage up the Palimbang river was made in boats, and after great difficulties, including the capture of the enemy's batteries at Borang, the force arrived on the 24th April within 20 miles of the Sultan's capital. The latter fled on hearing of the approach of the British, abandoning his city to massacre and plunder. Colonel Gillespie, with wonderful intrepidity, accompanied only by a few officers and 17 grenadiers of the 59th, left the main body on the 25th, and, travelling in canoes and boats, arrived at Palimbang after nightfall, the remaining force under Lieutenant-Colonel McLeod having orders

*NOTE.—In 1814, in the Nepal campaign, Major-General Gillespie was shot through the heart when leading the attack on a fort near Dehra Dun.

to follow expeditiously. An officer, who was present, gives the following account of the Colonel's arrival :—

"Undismayed, in the face of numerous bodies of armed men, Colonel Gillespie boldly stepped on shore at eight o'clock at night, and with those who had accompanied him in the canoe and the seven grenadiers (these were in the leading boat) he marched with a firm step through a multitude of Arabs and treacherous Malays whose missile weapons, steeped in poison, glimmered by the light of torches.

Huge battlements, with immense gates leading from one area to another, received our friends, and presented to them the frightful spectacle of human blood, still reeking and flowing on the pavement. The massy gates closed upon our rear, and the blood-stained court-yards, through which we were conducted, appeared as if it were the passage to a slaughter-house."

Escaping an attempted assassination by a Malay on the way, the Colonel passed on through burning streets to the palace, which "exhibited a melancholy picture of devastation and cruelty. Murder had here been succeeded by rapine; and while the place was completely ransacked, the pavements and floors were clotted with blood. In every direction spectacles of woe caught our sight, and rendered peculiarly awful by the glare of the surrounding conflagration, and vivid flashes of lightning, amidst loud peals of thunder. The devouring flames which continued to spread destruction, notwithstanding the heavy rain which poured down in torrents, had now reached the outer buildings of the palace, and threatened the part where we had taken up our temporary abode. The crackling of bamboos, resembling the discharge of musquetry, the tumbling in of burning roofs with a tremendous crash, the near approach of the fire, situated as we were in the midst of an immense hostile multitude and assassins, altogether gave to our situation a most appalling prospect."

Colonel Gillespie barricaded all the entrances but one, and stationed a guard of grenadiers at the principal gateway. At midnight sixty men of the 89th Regiment arrived, and the remainder of the force joined in the early morning.

By these bold and well-devised proceedings the fort, armed with 242 pieces of cannon, was occupied without loss, the people being overawed by the intrepid bearing of the British commander. The Sultan's adherents fled, and the British flag was hoisted on the Sultan's bastion on April 28th. After protracted negotiations the younger brother of the Sultan was placed on the throne under the auspices of the British Government. The island of Banca was ceded to the British, and formally taken possession of and named Duke of York's Island by Colonel Gillespie on 20th May 1812.

This expedition having been brought to a successful issue, the Commander of the Forces sailed for Batavia, arriving there on June 1st, but left at once for Samarang, where fresh work awaited him.

The Sultan of Mataram, who had his seat at Djoejocarta, stood at the head of a general confederacy of the native princes of Java, whom he proposed to combine for the destruction of all the

Hostilities with the Sultan of Mataram.

Europeans in the island. The officer already quoted gives the following description of Djoejocarta :—

"The Crattan or residence of the Sultan, and of all his court, is about 3 miles in circumference, surrounded by a broad wet ditch with draw-bridges; a strong thick, high rampart with bastions, and defended by near one hundred pieces of cannon. In the interior are numerous squares and court-yards, enclosed with high walls, all very strong within themselves and defensible. At this time the principal entrance or square in front had a double row of cannon facing the entrance, besides which it was flanked with newly-erected batteries to the right and left. Seventeen thousand regular troops manned the works; whilst an armed population of more than one hundred thousand surrounded the exterior Campongs for many miles round, and also occupying the walls and fastnesses along the sides of the different roads leading to the Crattan. The fort built by the Dutch, which is about eight hundred yards from the nearest face of the Crattan, is but ill-calculated for any other use than as a dépôt for military stores. These were scanty, and the powder, which was of the old Dutch manufactory, proved very bad; so that our firing was only intended to amuse the enemy whilst our little force was concentrating."

On the 17th June the Lieutenant-Governor and the Commander of the Forces arrived at the fort, and attempted to come to amicable terms with the Sultan. The latter, however, would not listen to reason, but sent out strong bodies of horse to intercept the communications by burning and destroying the bridges and laying waste the country. The British force at this time consisted only of detachments of the 14th Foot, the Bengal Light Infantry, the 3rd Volunteer Battalion, with a few guns and two troops of the 22nd Dragoons.

Colonel Gillespie at once went out with fifty dragoons to reconnoitre the country, but was careful to avoid hostilities, in spite of the threatening attitude of the people.

Towards evening the Sultan sent out a large body of troops with a flag of truce to demand the surrender of the British, and during the night the outposts in the Dutch town were attacked, as well as the picquets posted to keep the communications open on the road by which reinforcements were expected, whilst a party of dragoons under Lieutenant Hales, sent out to join the relieving force, had to cut their way through multitudes of spearmen, losing six men killed and having their officer wounded.

On the morning of 19th June Lieutenant-Colonel McLeod arrived with a detachment, Royal Artillery, the grenadiers of the 59th Regiment, the flank companies and rifle company of the 78th, a small party of Hussars, and a detachment of Madras Horse Artillery. Preparation was then made by firing the Campongs for an assault on the Crattan. In the evening all troops were ordered into the fort, and just before dawn on 20th June three columns issued from the British quarters, escalated the walls, and after a severe conflict which lasted three hours, during which Colonel Gillespie, ever in the forefront of the fight, was severely wounded in the arm, the place was captured and the Sultan taken prisoner. The British loss amounted to 23 rank and file killed, nine officers (one mortally) and 67 men wounded.

The success of this enterprise ensured the safety of the island. The natives at Bantam, Cheribon, Sourabaya, and other places were ready to rise at the first signal, and had already attempted to do so at the latter town. But the capture of Djoejocarta and its Sultan put an end to all fear of insurrection, and peace was now established on a firm basis throughout Java and its dependencies.

APPENDIX.

Since concluding the foregoing narrative, the writer has had an opportunity of perusing an article on *Java and its Dependencies* published in the *Quarterly Review* for December 1811.

This article contains much interesting information on points connected with the Dutch occupation of the island, some of which present remarkable parallels to the history of our own time.

"Cast an eye," says the reviewer, "over the details given by their countryman Valentyn, and it will meet with such massacres of women and children, such wanton destruction of towns and villages, as are enough to appeal the stoutest heart." We have it on good authority that similar enormities were committed under the orders of Mr. Krüger on the Caffres in South Africa.

Again, we are told that—"In Amboyna and Banda they seized all the English settlers with their families and put them to death with all the tortures which malignant ingenuity could invent. The English Government submitted to this indignity almost without a murmur. James I and his council were too busily engaged in discussing the divine right of Kings at home, to avenge the wrongs of his subjects abroad. Equally fortunate were the Dutch in escaping retribution for another enormity, still more horrible, committed on the offenceless Chinese in Batavia, of whom they massacred 12,000 in cold blood, without the smallest resistance on the part of the unfortunate victims."

In suggesting that all the fortifications in Java should be dismantled, the reviewer thus expresses himself—"We are fully aware that two descriptions of men will affect to be startled by such a proposition, *vis.*, philanthropists by profession and patriots by name. Those candidates for popularity, who are tremblingly alive to every injury done to the enemy, but who have a ready excuse for the most iniquitous measures pursued against their own country will be apt to exclaim—'What is to become of the poor Dutch and Chinese settlers?' We freely confess that our feelings are not remarkably tender with respect to the former. For what, we would ask, are the claims which entitle them to our forbearance? Is it the gratitude shown to the British nation for raising them at first from their marshes and mud banks, and making them respectable among the nations of Europe? Is it their attention and kindness to the army that was invited to protect them against the revolutionary hordes of France, or their hollow friendship for the cordial support which Great Britain has on all occasions been ready to afford them? What have these Dutchmen done for humanity to entitle them to such peculiar consideration? If

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BY THE LATE LIEUTENANT A. E. TURNER, R.E.

Motto : " Taught by War, and deceived by Peace."

I. INSTRUCTION.

The experiences of the Boer War of 1899-1901 have shewn that the accuracy and long range of modern fire-arms and the invisibility of the combatants, attained by the use of smokeless powder, have considerably altered the conditions of warfare.

The war has also taught us the necessity of improving the efficiency of our soldiers to the point now required by modern conditions.

The majority of its lessons are, however, but repetitions of old ones which we have or ought to have learnt from the experiences of former campaigns. Many of the conditions met with in South Africa are, besides, peculiar to the country and the enemy our army there was engaged against. Consequently a complete reform of our system of training in India is not required, but only certain important modifications. The necessity of many of these modifications has already been recognised and the requisite instructions have been issued from headquarters.

Before considering the system of training to be adopted, it is first

The object of training. necessary to obtain a clear idea of what the object of this training should be.

This object may be described as *Efficiency in Warfare*.

First, as regards the *Warfare* in which the Army in India may be

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two most important are—

(1) The warfare required against a civilized power in Southern Asia.

(2) That required against the uncivilized or half-civilized tribes that live on the borders of the Indian Empire.

Single regiments may also be called upon to take part in campaigns

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be required in after years to rejoin the colours for a Continental War.

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Efficiency.

In warfare the principal objects of an army would be one of the following :—

- (1) To meet the enemy and overwhelm him at the decisive point either by a superiority of fire, or
- (2) By means of shock tactics with the bayonet, lance, or sword.
- (3) Occupy certain important points in the theatre of war.

These objects are attained by certain movements and engagements in which the army, whose leaders apply correctly the soundest *tactical principles*, will obtain the advantage ; but, in order that they may be enabled to do so, the troops under their command must discharge properly the numerous *duties* required of them during the campaign.

It is the proper discharge of these duties and the correct application of sound tactical principles to the military operations in hand that constitute the efficiency of an army in warfare, and in considering the soldier's training these duties and principles and the lessons taught with regard to them will be separately discussed.

2. THE TRAINING OF THE ARMY IN INDIA.*

Considering the value of the interests at stake, both as regards the country for whose protection the Army in India is responsible, and the Empire in whose defence its soldiers may find themselves at any moment engaged, it seems reasonable to propose that the whole of each year be devoted to training this army and its soldiers for the duties required of them in war, and that the duties of peace be made a secondary consideration.

In order, however, that the whole year may really and not only nominally be devoted to field training, certain conditions appear essential—

Firstly, the regimental officers and their non-commissioned officers and men must be given sufficient time to carry out their training thoroughly.

Secondly, the responsibility for its success must be properly allocated to certain named officers, and all ranks must understand that the results of their work will be carefully and fairly tested, and their future promotion or pay made dependent on these tests.

Thirdly, each instructing officer or non-commissioned officer must be given every opportunity of learning his work and of exercising *his own* intelligence and ingenuity in carrying out his appointed tasks.

The interior economy and discipline of a corps should involve extremely simple arrangements, and

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office work should be reduced to a minimum. This matter is already recognized as requiring serious consideration.

* These preliminary remarks refer more particularly to British Infantry, but the same principles are applicable to British Cavalry and Native troops.

It appears that the greater part of the office work required is due to matters affecting the pay and allowances of soldiers and the issue of supplies and stores. As long as such an accurate account of military expenditure is demanded of departments and regiments, and so small powers of sanctioning expenditure of funds are given to general and regimental officers, the office work required to meet the demand of this close scrutiny cannot be reduced to any appreciable extent. The only remedy appears to be to relieve the battalion and company commanders of the responsibility of these accounts, which, together with the control of all institutes and regimental funds, and the submission of all returns, should be placed entirely in the hands of officers specially deputed with their necessary staff for this purpose. Thus one of the majors, the paymaster, and as many officers, non-commissioned officers and clerks as are required, might be deputed for one or two years together to administer all the interior economy and as much of the discipline as possible of the regiment, leaving the other officers free to conduct the training of their men. The officers thus deputed would of course have to attend the field training, but would not be required to carry out any instruction.

There are, however, some routine duties relating to the discipline and comfort of their men which only the battalion and company commanders can perform, and owing to the increased efficiency required by modern warfare, and the additional comforts demanded by modern civilization, these officers will probably find their work considerably increased.

Considering the great responsibilities now falling on regimental officers commanding units, it would seem only fair to increase their emoluments.

Horse allowance might certainly be given to every company commander, for, in order to perform his duties efficiently, he is obliged to ride.

As regards non-commissioned officers and men, most of their time and energies must be devoted to their training, and guards and other regimental duties should be reduced to a minimum. Section commanders should be relieved of as many routine duties as possible.

Fatigues and extraneous duties should be reduced except in so far as they help to increase the soldier's efficiency for war.

Thus coolies might be employed for such fatigues as carrying furniture, etc., while troops might do any work in barracks that involve the use of field work tools.

At inspections, when the work done by commanders of battalions,

companies, and sections is tested, the efficiency of the unit in its war duties should be the first consideration. This efficiency can best be tested while the troops are performing their usual duties in cantonments or during the camp training and field manoeuvres. Such inspections are of the greatest importance, for, as Prince Kratt said, "as the battalion is inspected so will it be drilled."

Every endeavour ought to be made to keep the same company commander until the annual training is completed, so that he may be made entirely responsible for the war efficiency of his company during the year he is instructing it. If the company commander is promoted out of, or transferred from, his battalion, his departure should, if possible, be postponed till the end of the year, his successor taking over the command at the beginning of the training. In order to prevent so many officers being absent from their regiments on special courses, the necessary instruction might be given in the same station; Deputy Assistant Adjutant-Generals for Instruction and Musketry visiting each station in turn and giving lectures and holding classes. This would ensure the necessary uniformity and keep all officers up to date in their knowledge of *Musketry, Law, Tactics, and Organisation*. The local engineer, medical, and transport officers could be detailed to give instruction to the regimental officers in *Field Works, the Care of Sick and Wounded, and Transport* duties respectively. This would have the advantage also of keeping these particular officers up to date in their war duties and bringing them in closer touch with the regimental training.

Non-commissioned officers and men required for work in offices, institutes, etc., should be removed from the training units for the year, fresh appointments being made at the end of the annual courses.

The soldier might also be encouraged by extra pay to qualify in the special duties described below (see page 24), and a temporary allowance might be given to all the men taking part in the last month's field manœuvres (see page 22).

Competitions between companies would add to the keenness of all ranks.

All information regarding the latest developments in the science of war and of the training and organization of our own and foreign armies might

The third condition. be issued regularly to regimental officers, and their own ideas on these subjects given consideration. Lectures and discussions might be held frequently in every cantonment on the same lines as they are at Aldershot.

The necessary rules for the guidance of regimental officers in their field training should be as general as possible, details of execution being left to commanders. By this means self-dependence and originality of ideas will be encouraged. The Boers, although of a lower class of intelligence than our troops, often displayed a better aptitude for war, the reason being that they were allowed to use their common sense freely, and were not hampered in this respect by regulations. They had been accustomed to think for themselves before coming to conclusions, instead of finding these conclusions ready made for them.

The training for all branches of the army (excluding recruits) might consist of annual courses, each

The training. course being divided into two parts, the first lasting for about eight months and being carried out in cantonments, and the second lasting for four months and conducted in camp.

The course might begin about March or April and for the first eight months could be devoted to instruction and practice in the duties described later, the largest portion of the time being devoted to *Musketry*. During the hot weather every cool hour should be spent in out-of-door practice, the hot hours being devoted to instruction and such practice as can be conducted under cover. Drill sheds might be constructed for this purpose. One morning a week can be placed at the disposal of the officer commanding the battalion for practising the companies in combined or separate duties as he may think fit. Guard and routine duties will occupy some portion of the time, and for the remainder each company should be at the disposal of the company commander for its field training and musketry. The training during these eight months should be directed towards making the companies efficient for the camp training that follows. The different duties should be practised continuously, so that the company may at any time be fit for the efforts required of it in war. This is especially necessary in regard to marching and physical exercises. During the camp training the efficiency of individual soldiers, as well as of sections, companies, and battalions will be tested in turn, and the reports of officers and non-commissioned officers will be based on the state of the units under their command.

The four months of field training in camp will conclude the annual course. The first two will be spent by each company in a separate camp which will be shifted occasionally to allow of fresh ground being utilized. During these two months the company commander will be left to carry out practical training in his own way. He will at the termination submit a report on the annual training with his recommendations regarding the section commanders and other non-commissioned officers or men whom he may wish to mention. One day in each week might be at the disposal of the officer commanding the battalion who would manœuvre the companies together or against one another.

For the third month two half-battalion camps would be formed under the commands of the majors. The half-battalion is a unit constantly employed in our small wars and was often used in South Africa. Practice in independent command will by this be given to the Majors as it is very necessary for them to be well trained with a view to replacing the Commandant, if necessary. The Majors will exercise their half battalions on every alternate day, and on the other days competitions between companies for the championship in field works, marching, etc., can be conducted, or the Colonel can manœuvre the half battalions together or against each other.

The results of the company training will be tested during this month, and the Colonel will at its conclusion prepare his report on the battalion training for the year with any recommendations he may wish to make regarding his officers and non commissioned officers.

During the fourth month the battalion will be at the disposal of the General Officer Commanding, who will practise it alone or in combination with the other arms, as he may prefer.

During this month field service conditions will be strictly observed, all men not passed as fit for service being first sent back to cantonments. The operations conducted during this period should be as realistic as possible, and should therefore, as far as possible, be continuous. If these manœuvres could be carried out regularly every year, the weekly field days might be given up. The limited time does not allow of troops being as well practised in combined manœuvres, and the staff would gain more experience by frequent staff rides lasting several days at a time.

The Boers, in spite of their inferiority in numbers, organization, and discipline, frequently proved themselves superior to our troops owing to their individuality and self-dependence. Their tactics seem to have been founded on these qualities. If such qualities were encouraged in our non-commissioned officers and men, they would become as much a part of their character as discipline has proved to be, and in whatever system that is adopted for the training of the army this essential characteristic of an efficient soldier must be recognized. Modern war cannot be successfully conducted without it. The British soldiers of the present day are far more intelligent than their predecessors, and there is no reason to suppose that if a proper method be pursued, the encouragement of self-dependence will in any way weaken their habits of discipline. While they are trained for more self-dependence, they must at the same time be impressed with the necessity of using it for aiding their comrades and furthering the plans of their Commander.

As drill must be modified to suit the modern conditions of war and stiff formations can now be little practised, we can no longer depend on them to ensure the discipline necessary under fire. If silence, steadiness, and attention in the ranks, quietness in movement, an upright carriage, smartness and cleanliness of dress, immediate and strict obedience to definite orders are very strictly insisted on, discipline will be well maintained. In giving an order officers and non-commissioned officers should always make it clearly understood whether this order is definite and requires to be executed exactly or only general, and leaving some discretion to the recipient in the manner in which he may carry it out.

3. THE DUTIES AND TRAINING OF INFANTRY.

The duties of infantry in war are general and special. General duties should be uniformly taught to all and special duties to certain selected soldiers.

The following are *General duties* :—

- (1) Accurate and well-controlled shooting.
- (2) The use of the bayonet.
- (3) Marching (including advance and flank guards).
- (4) Manœuvring (including the attack, defence, retirements, etc.).
- (5) Outposts.

- 6) Reconnaissance.
- (7) Camping and bivouacking.
- (8) Transport and convoys.
- (9) Field works.
- (10) Transmitting orders.
- (11) Cooking.
- (12) Care of health.
- (13) Care of the sick and wounded.
- (14) The conduct of warfare against an uncivilised enemy.

Special duties are—

- (1) Sharpshooting.
- (2) Working the machine gun.
- (3) Range-finding.
- (4) Special field works.
- (5) Scouting.
- (6) Signalling.
- (7) Orderly duties.

These different duties and the training required for them will now be discussed with special reference to the British soldier in India, who, it is assumed, has already received a recruit's training in drill and musketry.

(1) ACCURATE AND WELL-CONTROLLED SHOOTING.

Marksmen.—The war has illustrated the effects of the accurate and long range of modern rifles, and these two factors have considerably increased the value of the carefully aimed fire of *individual marksmen*. Steady shooting and accurate judging of the range are the qualifications of a marksman, and more practice in both should be given to the individual soldier. As the eyesight of our soldiers is often found inferior to that of less civilized enemies, every mechanical means that can be practically applied in the field should be made use of, in order to equalize this disadvantage. Mekometers, field glasses, telescopic sights, stereoscopic range-finders, and any other practical mechanical aids should be issued to our troops on a liberal scale and all should be trained in their proper use.

Volley firing.—The very extended formations adopted were not consistent with successful *volley firing*, and it does not seem that this kind of fire can any longer be employed effectually in the *attack* against a civilized enemy armed with the modern rifle, but it will still be used in the *defence* and against an uncivilized enemy, so that, though it may be assigned a less important place in the musketry training it should not be altogether abandoned.

Fire control.—A similar lesson is taught with regard to *collective firing* generally. In the *defence* and against an uncivilized enemy the men can be kept close enough to allow of some control over their

fire ; but in the *attack*, on a position held by a disciplined and well-armed force, control is sooner or later lost, and the efficiency of the attacker's fire then entirely depends on the intelligence and self-control of the individual. This *self-control of independent firing* should therefore be practised during the musketry training.

Musketry training.—The training might be conducted on the lines of the present regulations, but might be modified in several respects.

1. The course might be increased to 400 rounds and divided into the following parts :—

- I. *Individual*.—(Corresponding with Part I of Table B) from fixed ranges and at various kinds of targets, fixed, moving, and disappearing, and of various colours. 100 rounds.
- II. *Individual*.—(Course to be fixed by the Company Commander) from unknown ranges and at various kinds of targets. 50 rounds.
- III. *Collective*.—(Corresponding with Part II of Table B) from fixed ranges at various kinds of targets. 100 rounds.
- IV. *Collective*.—(Course to be fixed by the Company Commander) from unknown ranges and at various kinds of targets. 100 rounds.
- V. *Inspection*.—The Officer Commanding the Battalion will, at the end of the year, put the company through a course of firing from unknown ranges, with a view to testing the results of their training in respect to fire control and accuracy. 50 rounds.

The results of Parts I and III will count towards classes, marksmanship, and the figures of merit.

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In Part IV half the rounds allotted should be devoted to practising *self-control of independent fire*, and if the ground can be obtained, should be practised away from the range. If the range only is available, it will not be possible to practise more than a few men at a time, as they must be widely extended. Previous to the practice, bits of low walls, small mounds, and other cover should be constructed at irregular intervals along the range.

The men will be drawn up at the furthest point possible from the targets. These should consist of head and shoulder figures placed on a level with the ground, and if possible they should be made to appear suddenly at different parts of the butt.

About ten rounds will be distributed for each practice. The instructor will first point out the targets to the men and warn them to be on the look-out for fresh ones. He will then give them their instructions and extend them on as wide a front as possible. On receiving the signal the men will advance by short rushes, taking advantage of each bit of cover to fire one or two rounds. No further orders will be given after the advance has commenced. Each man will halt when he has expended his rounds.

The success of this enterprise ensured the safety of the island. The natives at Bantam, Cheribon, Sourabaya, and other places were ready to rise at the first signal, and had already attempted to do so at the latter town. But the capture of Djoejocarta and its Sultan put an end to all fear of insurrection, and peace was now established on a firm basis throughout Java and its dependencies.

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Thus coolies might be employed for such fatigues as carrying furniture, etc., while troops might do any work in barracks that involve the use of field work tools.

At inspections, when the work done by commanders of battalions,

companies, and sections is tested, the efficiency of the unit in its war duties should be the first consideration. This efficiency can best be tested while the troops are performing their usual duties in cantonments or during the camp training and field manœuvres. Such inspections are of the greatest importance, for, as Prince Kraft said, "as the battalion is inspected so will it be drilled."

Every endeavour ought to be made to keep the same company commander until the annual training is completed, so that he may be made entirely responsible for the war efficiency of his company during the year he is instructing it. If the company commander is promoted out of, or transferred from, his battalion, his departure should, if possible, be postponed till the end of the year, his successor taking over the command at the beginning of the training. In order to prevent so many officers being absent from their regiments on special courses, the necessary instruction might be given in the same station; Deputy Assistant Adjutant-Generals for Instruction and Musketry visiting each station in turn and giving lectures and holding classes. This would ensure the necessary uniformity and keep all officers up to date in their knowledge of *Musketry, Law, Tactics, and Organisation*. The local engineer, medical, and transport officers could be detailed to give instruction to the regimental officers in *Field Works, the Care of Sick and Wounded, and Transport* duties respectively. This would have the advantage also of keeping these particular officers up to date in their war duties and bringing them in closer touch with the regimental training.

Non-commissioned officers and men required for work in offices, institutes, etc., should be removed from the training units for the year, fresh appointments being made at the end of the annual courses.

The soldier might also be encouraged by extra pay to qualify in the special duties described below (see page 24), and a temporary allowance might be given to all the men taking part in the last month's field manœuvres (see page 22).

Competitions between companies would add to the keenness of all ranks.

All information regarding the latest developments in the science of war and of the training and organization of our own and foreign armies might

The third condition. be issued regularly to regimental officers, and their own ideas on these subjects given consideration. Lectures and discussions might be held frequently in every cantonment on the same lines as they are at Aldershot.

The necessary rules for the guidance of regimental officers in their field training should be as general as possible, details of execution being left to commanders. By this means self-dependence and originality of ideas will be encouraged. The Boers, although of a lower class of intelligence than our troops, often displayed a better aptitude for war, the reason being that they were allowed to use their common sense freely, and were not hampered in this respect by regulations. They had been accustomed to think for themselves before coming to conclusions, instead of finding these conclusions ready made for them.

The training for all branches of the army (excluding recruits)

The training. might consist of annual courses, each course being divided into two parts, the first lasting for about eight months and being carried out in cantonments, and the second lasting for four months and conducted in camp.

The course might begin about March or April and for the first eight months could be devoted to instruction and practice in the duties described later, the largest portion of the time being devoted to *Musketry*. During the hot weather every cool hour should be spent in out-of-door practice, the hot hours being devoted to instruction and such practice as can be conducted under cover. Drill sheds might be constructed for this purpose. One morning a week can be placed at the disposal of the officer commanding the battalion for practising his companies in combined or separate duties as he may think fit. Guards and routine duties will occupy some portion of the time, and for the remainder each company should be at the disposal of the company commander for its field training and musketry. The training during these eight months should be directed towards making the company efficient for the camp training that follows. The different duties should be practised continuously, so that the company may at any time be fit for the efforts required of it in war. This is especially necessary in regard to marching and physical exercises. During the camp training the efficiency of individual soldiers, as well as of sections, companies, and battalions will be tested in turn, and the reports on officers and non-commissioned officers will be based on the state of the units under their command.

The four months of field training in camp will conclude the annual course. The first two will be spent by each company in a separate camp which will be shifted occasionally to allow of fresh ground being utilized. During these two months the company commander will be left to carry out practical training in his own way. He will at the termination submit a report on the annual training with his recommendations regarding the section commanders and other non-commissioned officers or men whom he may wish to mention. One day in each week might be at the disposal of the officer commanding the battalion who would manœuvre the companies together or against one another.

For the third month two half-battalion camps would be formed under the commands of the majors. The half-battalion is a unit constantly employed in our small wars and was often used in South Africa. Practice in independent command will by this be given to the Majors, as it is very necessary for them to be well trained with a view to replacing the Commandant, if necessary. The Majors will exercise their half battalions on every alternate day, and on the other competitions between companies for the championship in field works, marching, etc., can be conducted, or the Colonel can manœuvre the half battalions together or against each other.

The results of the company training will be tested during this month, and the Colonel will at its conclusion prepare his report on the battalion training for the year with any recommendations he may wish to make regarding his officers and non-commissioned officers.

During the fourth month the battalion will be at the disposal of the General Officer Commanding, who will practise it alone or in combination with the other arms, as he may prefer.

During this month field service conditions will be strictly observed, all men not passed as fit for service being first sent back to cantonments. The operations conducted during this period should be as realistic as possible, and should therefore, as far as possible, be continuous. If these manœuvres could be carried out regularly every year, the weekly field days might be given up. The limited time does not allow of troops being as well practised in combined manœuvres, and the staff would gain more experience by frequent staff rides lasting several days at a time.

The Boers, in spite of their inferiority in numbers, organization, and discipline, frequently proved themselves superior to our troops owing to their individuality and self-dependence. Their tactics seem to have been founded on these qualities. If such qualities were encouraged in our non-commissioned officers and men, they would become as much a part of their character as discipline has proved to be, and in whatever system that is adopted for the training of the army this essential characteristic of an efficient soldier must be recognized. Modern war cannot be successfully conducted without it. The British soldiers of the present day are far more intelligent than their predecessors, and there is no reason to suppose that if a proper method be pursued, the encouragement of self-dependence will in any way weaken their habits of discipline. While they are trained for more self-dependence, they must at the same time be impressed with the necessity of using it for aiding their comrades and furthering the plans of their Commander.

As drill must be modified to suit the modern conditions of war and stiff formations can now be little practised, we can no longer depend on them to ensure the discipline necessary under fire. If silence, steadiness, and attention in the ranks, quietness in movement, an upright carriage, smartness and cleanliness of dress, immediate and strict obedience to definite orders are very strictly insisted on, discipline will be well maintained. In giving an order officers and non-commissioned officers should always make it clearly understood whether this order is definite and requires to be executed exactly or only general, and leaving some discretion to the recipient in the manner in which he may carry it out.

3. THE DUTIES AND TRAINING OF INFANTRY.

The duties of infantry in war are general and special. General duties should be uniformly taught to all and special duties to certain selected soldiers.

The following are *General duties* :—

- (1) Accurate and well-controlled shooting.
- (2) The use of the bayonet.
- (3) Marching (including advance and flank guards).
- (4) Manœuvring (including the attack, defence, retirements, etc.).
- (5) Outposts.

- 6) Reconnaissance.
- (7) Camping and bivouacking.
- (8) Transport and convoys.
- (9) Field works.
- (10) Transmitting orders.
- (11) Cooking.
- (12) Care of health.
- (13) Care of the sick and wounded.
- (14) The conduct of warfare against an uncivilised enemy.

Special duties are—

- (1) Sharpshooting.
- (2) Working the machine gun.
- (3) Range-finding.
- (4) Special field works.
- (5) Scouting.
- (6) Signalling.
- (7) Orderly duties.

These different duties and the training required for them will now be discussed with special reference to the British soldier in India, who, it is assumed, has already received a recruit's training in drill and musketry.

(1) ACCURATE AND WELL-CONTROLLED SHOOTING.

Marksmen.—The war has illustrated the effects of the accuracy and long range of modern rifles, and these two factors have considerably increased the value of the carefully aimed fire of *individual marksmen*. Steady shooting and accurate judging of the range are the qualifications of a marksman, and more practice in both should be given to the individual soldier. As the eyesight of our soldiers is often found inferior to that of less civilized enemies, every mechanical means that can be practically applied in the field should be made use of, in order to equalize this disadvantage. Mekometers, field glasses, telescopic sights, stereoscopic range-finders, and any other practical mechanical aids should be issued to our troops on a liberal scale and all should be trained in their proper use.

Volley firing.—The very extended formations adopted were not consistent with successful *volley firing*, and it does not seem that this kind of fire can any longer be employed effectually in the *attack* against a civilized enemy armed with the modern rifle, but it will still be used in the *defence* and against an uncivilized enemy, so that, though it may be assigned a less important place in the musketry training, it should not be altogether abandoned.

Fire control.—A similar lesson is taught with regard to *collective firing* generally. In the *defence* and against an uncivilized enemy the men can be kept close enough to allow of some control over their

fire ; but in the *attack*, on a position held by a disciplined and well-armed force, control is sooner or later lost, and the efficiency of the attacker's fire then entirely depends on the intelligence and self-control of the individual. This *self-control of independent firing* should therefore be practised during the musketry training.

Musketry training.—The training might be conducted on the lines of the present regulations, but might be modified in several respects.

1. The course might be increased to 400 rounds and divided into the following parts :—

- I. *Individual*.—(Corresponding with Part I of Table B) from fixed ranges and at various kinds of targets, fixed, moving, and disappearing, and of various colours. 100 rounds.
- II. *Individual*.—(Course to be fixed by the Company Commander) from unknown ranges and at various kinds of targets. 50 rounds.
- III. *Collective*.—(Corresponding with Part II of Table B) from fixed ranges at various kinds of targets. 100 rounds.
- IV. *Collective*.—(Course to be fixed by the Company Commander) from unknown ranges and at various kinds of targets. 100 rounds.
- V. *Inspection*.—The Officer Commanding the Battalion will, at the end of the year, put the company through a course of firing from unknown ranges, with a view to testing the results of their training in respect to fire control and accuracy. 50 rounds.

The results of Parts I and III will count towards classes, marksmanship, and the figures of merit.

In Parts II and IV the course will be fixed by the Company Commander.

In Part IV half the rounds allotted should be devoted to practising *self-control of independent fire*, and if the ground can be obtained, should be practised away from the range. If the range only is available, it will not be possible to practise more than a few men at a time, as they must be widely extended. Previous to the practice, bits of low walls, small mounds, and other cover should be constructed at irregular intervals along the range.

The men will be drawn up at the furthest point possible from the targets. These should consist of head and shoulder figures placed on a level with the ground, and if possible they should be made to appear suddenly at different parts of the butt.

About ten rounds will be distributed for each practice. The instructor will first point out the targets to the men and warn them to be on the look-out for fresh ones. He will then give them their instructions and extend them on as wide a front as possible. On receiving the signal the men will advance by short rushes, taking advantage of each bit of cover to fire one or two rounds. No further orders will be given after the advance has commenced. Each man will halt when he has expended his rounds.

When all have halted the men will fall in and the instructor will call attention to any mistakes that have occurred. The men might then as a further practice fire ten more rounds in a similar manner while retiring down the range.

The rest of the rounds in Part IV can be expended in other forms of collective firing.

No account need be required from the Company Commander of rounds expended in Parts II and IV, the efficiency of his company being tested by the Commanding Officer's inspection in Part V.

2. In standing, kneeling, or lying *no fixed posture* should be insisted on, but each man be allowed to adopt one by which he can make the best use of his weapon.

3. The existing ranges, lengthened if possible, can be used for Parts I and II, but for Parts III, IV and V it would be better to have two new ranges—one with and one without firing points—for the collective practices of each battalion. These ranges should be at least 1,500 yards long and 2,000 yards if the ground is available.

4. The *targets* should be of various shapes, sizes, and colours, fixed, moving, and disappearing.

5. The proportion of *volley firing* in Part III should be reduced and *independent firing* substituted.

6. In some stations, where the country admits of it, it is possible to combine some of the musketry practice with *manœuvring*. The course may then be similar to that carried out by the Guides Infantry during the musketry season, 1898-99.

Field firing by large bodies of troops is not advocated; it does not give a real idea of battle, as too many precautions have to be taken to avoid accidents. Plenty of blank ammunition should, however, be issued for manœuvres.

7. *Marksmen*, besides receiving badges, should receive extra pay while they remain efficient. They should fire a special course, receive field glasses, and be allowed to use any practical mechanical aid to improve their shooting.

8. *Judging distances* should be more practised by all ranks in different localities and at different times of day.

9. Additional grants should be made to *rifle clubs*.

(2) THE USE OF THE BAYONET.

The bayonet was used effectively on several occasions during the war, and its moral effect was always great when our troops got to close quarters with the Boers. The experiences of the campaign bear out the conclusion already arrived at, that the use of the bayonet is a far less important duty than accurate and well controlled shooting, but they present no proof of the advisability of abolishing this weapon altogether. They rather show that troops armed with the bayonet possess certain definite advantages over those who are without it.

Training.—If the bayonet is to be one of the soldier's weapons, he should be taught how to *fight* with it. Bayonet exercises go a very short way in this direction, and the practice that is required is that of man against man with the spring bayonet, helmet, pads, etc., supplied to gymnasiums. The use of the bayonet is essentially an individual matter in war and should be practised as such in peace. This practice could be carried out during the day in the hot weather.

(3) MARCHING (INCLUDING ADVANCED AND FLANK GUARDS).

This war has shown how difficult it is to secure any tactical success under modern conditions without prolonged and carefully executed preliminary movements, and the success of such movements as well as of the first advance into the enemy's country depends to a great extent on rapid and continuous marching; and in a campaign like this one, where the capture of certain important points in the theatre of war is made the object of the army, Napoleon's saying "I have destroyed the enemy by marches" has a peculiar significance. Besides being able to march rapidly, troops must be capable of carrying tools and some days' rations as well as ammunition, if their march is to be independent of transport and consequently continuous.

Most foreign armies have recognized this necessity, which was impressed on them by the experiences of the Franco-Prussian and Russo-Turkish wars.

Training.—Marching should be practised all the year round. The men should be trained gradually by short marches and with light equipment; the lengths of the marches and weight of the equipment being gradually increased till during the field training in camp, when they should be capable of marching 15 miles with ammunition, tools, and a few days' rations. If full sized tools are carried, it would be sufficient for every fourth man to carry one tool.

The different units should be practised in time of marching and advanced and flank guards. Precautions against *ambushes* should be practised during marches, a few men being sent out ahead to represent the enemy and to attempt to ambuscade the column. As marching becomes dull, if practised by itself, some manœuvres may be combined with it. Marching by night (which is an important feature of modern war) should be practised over different descriptions of country. Men should be taught the proper care of their feet, cases of foot soreness (a constant source of casualties and consequent reduction of numbers on every campaign) being taken special notice of.

The efficiency of each company in this most important duty should be tested during the battalion field training. A challenge trophy might be given to the company that shows itself most efficient.

(4) MANŒUVRING.

The war has repeated the lesson that all drill and manœuvres should be founded on the most modern tactical principles. This duty will therefore be considered under these heads.

Attack.—The war has cleared up many doubts as to what *formations* should be adopted in the attack. *Skirmishing* is undoubtedly the only formation in which the front line will be able to openly approach a position held by an enemy armed with modern weapons. Well-ordered lines with battalions occupying a fixed frontage and men at fixed intervals were found no more practicable than they were in the Russo-Turkish or Franco-Prussian campaigns. The disorder and intermixing of units was the same, and it will be best to make up our minds to this unavoidable confusion in the attack and arrange our training accordingly. This skirmishing formation will have to be adopted before the troops arrive within effective range, as otherwise heavy losses will be increased at the commencement of the action. The losses sustained by the Guards at Belmont afford an example of this. The *formations* adopted by the troops in rear of the front line will have to be very extended if they can be reached by the enemy's fire. A good many casualties occurred among these troops during the heavier engagements of the war. As long as our men remained well extended and took advantage of cover, the effect of the enemy's *artillery* fire was extremely small, but troops caught by it in close formations were often severely punished.

As to *tactical principles* in the attack, the war showed that they must be correctly applied to ensure success. *Frontal attacks* against prepared positions involved the same heavy losses as formerly, and properly conducted *flank attacks* gave the same good results as in previous campaigns.

It often proved extremely difficult to outflank the enemy owing to their mobility, and great advantages will accrue in future wars to the army who can, if necessary, make use of *mounted infantry* for this purpose. The importance of taking proper advantage of the ground for the purpose of *concealment and cover* and the necessity of constructing artificial cover at every pause in the advance were again exemplified. *Secrecy* in preparing and carrying out the preliminary movements proved an essential factor in the success of an attack.

The *supply of ammunition* to the firing line was on the open veldt a most difficult operation.

It was found impossible to exercise a proper *control of fire* or of *movements* after the troops were once committed to the attack, and this control will have to be delegated to a great extent to section commanders and individual soldiers in future wars.

This *self-control* by sections and individuals should therefore be practised in the training of the army.

Defence.—The two principal lessons to be learnt from the Boer's defensive tactics are, firstly, the proper use of cover, natural and artificial, to protect and conceal the defenders; and, secondly, the use of mounted troops and long range weapons to extend and thus protect the flanks.

The Boers also often selected positions from which they could command with their rifle fire the points where the opposing field

batteries had to come into action; they fixed their ranges beforehand, held their fire till the attackers were at close quarters, increased the intensity of their fire by adopting more than one tier in their lines, and made good use of their mounted men in covering their retirements. The adoption of these principles several times gave them the victory and generally saved them from any severe loss, even if driven out of their positions. Where they failed, however, was in taking the offensive after they had driven us from their positions. It is not likely that a European enemy would ever allow us to retire from before their position without endeavouring to overpower us by a counterattack.

Retirements.—The Boers by the skilful use of their mounted men, and long range guns, applied the two principles of deceiving and delaying the pursuing enemy with great success. They had the additional advantage of knowing the ground over which they had to retire, and in an unknown country a proper reconnaissance of the lines of retreat is necessary to ensure this knowledge.

Night manœuvres.—With a view to surprising the enemy and avoiding the heavy losses incurred in making movements by day a great deal of night manœuvring was found necessary.

It was often found very difficult to keep a proper control over the men or prevent them being attacked by "nerves." The Boers being less disciplined were very liable to such attacks at night and consequently wasted a good deal of their ammunition. Strict discipline and practice in moving and carrying out duties by night is required to accustom men to keep in touch with each other and obey orders in the dark.

Training.—For proficiency in this branch of infantry duties, careful instruction and constant practice for all ranks is necessary.

The instruction should consist of lectures in which tactical principles and the movements that arise from them should be explained and illustrated by historical examples. By this means the object of each formation and movement will be better impressed on the men's memories than by a simple repetition of the drill book.

If the object of the army is to prepare itself for modern war, all drill should be adopted to modern tactics, and should therefore be practised over rough ground and in different localities.

Parade drills may safely be reduced to a minimum. They are kept up in foreign armies, but not to the detriment of the war training. In these armies the soldier is not a volunteer and can consequently be worked a great deal harder than our men can be. The German soldier works all day, but the *maximum* work expected of our regiments in India during the greater part of the year is about five mornings and possibly four afternoons a week. If therefore our army is, under such conditions, to be made a better fighting one than that of other nations, there will be very little time left for practising drill movements not required in war. We will therefore consider the formations and movements required by modern tactical conditions.

Attack.—No detailed rules for the conduct of the attack which will meet the exigencies of war can be laid down. It is possible to adopt certain formations by which troops can be manœuvred without disorder in peace, but such formations cannot prevent disorder in war. The formations adopted in each case will depend entirely on the kind of enemy attacked and the nature of the country in which operations take place, and unless the country is quite regular and the enemy offers no resistance, even these will be broken up when the position is approached; and the issue of the fight will, as it always has done since accurate rifle fire was introduced into warfare, depend on the isolated actions of groups of men and the subordinate leaders that command them. The true summit of perfection to be aimed at should be 'the preservation of order in disorder and of system in confusion.' This object can only be arrived at by training the individuality and intelligence of the regimental officer and soldier. In manœuvres, therefore, regimental commanders, besides training their units in advancing with the men at fixed intervals, should also constantly practise them in adopting formations suited to the ground.* In this practice the frontage that each company should occupy and its direction or guiding flank may be given, but the formations to be adopted by each company should be left to the Company Commander.

The usual method of attacking a position will now be described. It will be seen that the most difficult and important movements are those carried out by the front or skirmishing line; consequently in drilling troops, though all the necessary formations laid down in the drill book must be practised, special attention should be paid to training them in the skirmishing movements described.

The attack is preceded by a *reconnaissance* carried out either by cavalry *single scouts* or in force. Reliable information having been obtained (to attack without reliable information has often proved disastrous), certain preliminary movements are made. These movements consist generally in (1) taking up a *defensive position* in the enemy's front with as few troops as possible, (2) detaching a second portion of the force as a *reserve* and (3) sending the remainder in the direction of one of *the enemy's flanks*. The *concealment* of these preliminary movements is of vital importance, and every possible device should be adopted in order to deceive the enemy as to the real intentions of the attacking force. This may be effected by massing the mounted troops or more mobile portion of the force at points where it is not intended to advance, or by making false turning movements with them and afterwards moving them rapidly to the reserve or real point of attack.

A *screen of cavalry and infantry scouts* may be extended to the front, or to further ensure secrecy these preliminary movements may be carried out *under cover of darkness*.

* To attempt to combine the two is to attempt a paradox.

(1) The troops in the enemy's front should *entrench* their defensive position and await developments.

The object of this portion of the force is to protect the lines of communication and baggage in rear, and subsequently, if the turning movement proves successful, to join in the general advance.

(2) The reserves are posted in some central position ready for developments and the more mobile they are the better. The timely arrival of reinforcements at the critical point in the action has often given them the victory. If the enemy are deficient in mounted men and the flank movement can be entrusted to infantry, the mounted infantry should be kept ready with the reserve after demonstrating in other parts of the field.

(3) If the enemy like the Boers are employing large numbers of mounted troops in their defence, the attacker's turning force will have to consist largely of mounted infantry. When the turning force has completed its turning movement (under modern conditions it generally has to be a very wide one), it reaches some portion from which the attack can be delivered.

Assisted as far as possible by the fire of artillery, the infantry then advance in two irregular lines ; the front line consisting of *skirmishers* who form the *firing line* and its *supports* and the rear line of *reserves* who move in a formation most suited to the ground, and are kept in readiness to resist a counter attack, reinforce the front line, or cover a retirement if this is found necessary.

These reserves will, unless well-concealed by the configuration of the ground, have to be well-extended and every effort must be made to keep control over them both by means of *signalling*, and if the ground admits by mounted or dismounted *orderlies*.

No such control can be kept over the front line when it is once engaged, and here great latitude must be allowed to regimental officers as regards the formations and movements they may adopt in carrying out their orders.

In training infantry for this part of the attack the following points should be considered :—*

(1) The front line is made up of firing line and supports.

(2) All non-commissioned officers and men engaged should receive instructions as to what is required of them before the advance begins.

(3) The extension should, if possible, be made out of sight of the enemy and every man should, as far as possible, be kept under cover from the first.

(4) The actual cover available should decide the position of each individual soldier.

(5) Any suitable cover may be taken advantage of to re-organize the units.

* Colonel Plowden's " Notes on Skirmishing " have been followed to some extent there.

(6) The men should be trained to think and act for themselves, which means that they should be able, while maintaining the rough line of advance, to judge when and how to take cover, when and in what direction to fire, and whether to close or extend. They should be thus capable of carrying on the fight, although deprived of their leaders.

(7) The different units and individual soldiers should be trained to afford each other mutual support by keeping down the enemy's fire in order to aid the advance of their comrades.

(8) Every kind of cover should be taken advantage of.

(9) Crowding together or clinging to well-defined lines of approach (such as paths, nullahs, etc.) should be avoided.

(10) The attack should be carried out slowly in practice, as this is what happens in war.

(11) The officers should lead and the section commanders control and assist.

(12) The advance should be by driblets from cover to cover.

(13) The supports should reinforce the firing line, if they are required, by driblets.

(14) Intermixing of units should be allowed if circumstances make it necessary. Such disorder always occurs in war and the remedy for it is found in the individual intelligence of the men.

(15) The advance will be carried on as far as circumstances admit.

(16) If an assault is feasible, the men should close as the position is neared.

(17) In case of counterattack every man should be trained to at once reinforce the threatened point either by his fire or his bayonet.

(18) Rallying and sudden concentration should be practised during and after every attack. The completeness of a victory depends on the speed with which the troops rally and continue the pursuit.

(19) Independent pursuit should not, as a rule, be permitted.

The experiences of the campaigns of the latter part of the nineteenth century have proved that the manœuvres required for a successful attack must be carried out on similar lines to those just described. The preliminary movements and those of the reserves and the containing force can generally be conducted under the control of the Chief Commander, but the success of the actual attack at close quarters depends on the skill and courage of the regimental officers and the individual soldiers under their command.

Defence.—The instructions contained in the drill book are very complete and the principles there laid down are not much modified by recent experiences. The following points should be particularly attended to in the training of infantry:—

(1) Entrenching the defensive position.

(2) Concealing the works and themselves.

(3) Practising the counterattack.

Retirements.—Experiences on the Indian frontier have taught us the right principles to be adopted in retirements. Those must be covered by as few and as active men as possible. For the training of infantry the instructions contained in several books on frontier warfare that have been published lately in India may be followed. Covering a retirement is one of the principal duties of mounted or other mobile infantry, where the nature of the country admits of their employment.

Night manœuvres.—These must be often practised, but not necessarily for long at a time or in large bodies. The company might be exercised regularly once a fortnight for an hour or two after dark in the vicinity of barracks, and occasionally during the camp training night manœuvres on a larger scale could be practised.

(5) AND (6) OUTPOSTS AND RECONNAISSANCES.

The importance of these duties has been further emphasized by the experiences of this war. The principles on which they should be carried out are already well known, but far more practice in them is required.

One modification necessary in the instructions of the drill book with regard to *outpost* is the increase of distances between the main body and outpost line. On several occasions during the war the Boer artillery succeeded in shelling our camps, although one of the first duties of an outpost line is to prevent the enemy's artillery getting within range of the main body.

The necessity of a thorough *reconnaissance* before deciding on any movement has also been exemplified. Such reconnaissance is now extremely difficult to carry out successfully, especially in an open country, owing to the use of long range weapons and smokeless powder, and individual *scouts* will have to be more largely employed to supplement the work of the cavalry and infantry.

Training.—Instructions are already given very fully in the drill book, but the principles would be more thoroughly grasped and better remembered, if, when being taught, they were illustrated with examples. Stress should be laid on the importance of *concealing* as far as possible the dispositions and movements of outposts and reconnoitring troops. Particular attention should be paid to the instruction of the individual soldier and to the training of his intelligence and self-dependence. In the proper performance of these two duties nearly everything depends on the individual. To make the practice realistic these two duties can best be practised together. One part of the unit under training can be marched out to some position and posted as outposts, with a large proportion of sentries, each picquet being represented by a man or two only. The other part will afterwards be taken out in the same direction and extended as scouts to reconnoitre the outpost line. Individual men should be encouraged to give information on their own initiative. The commander of each party will be allowed to carry out his dispositions in his own way, the instructing officer watching both parties and afterwards receiving

their report. At the end of the practice the mistakes of each side will be explained and instruction given for the future. Special attention should be paid by commanders to the selection of individual men who show particular intelligence in the discharge of these duties, and they should receive some extra training, being taken out or sent out by themselves to make small reconnaissances. These men would be employed as regimental scouts during the field manœuvres (see page 23), and might, while so employed, receive some additional allowance.

(7) AND (8) CAMPING AND BIVOUACKING, TRANSPORT AND CONVOYS.

The comfort of their troops, the protection of their convoys, and the proper care of their transport animals are matters of grave anxiety to commanders in all campaigns ; but unless the troops have some knowledge and experience in the proper discharge of their duties in respect to them, the best laid plans are disarranged.

The long duration of this war has emphasized the importance of these duties.

The soldier should be carefully instructed in them and impressed with their great importance, but experience in them is of more use than instruction, and this will be gained during the camp training. Competitions might be conducted between companies in practical arrangements for bivouacks, smartness and care in pitching tents, loading baggage, and the fitness of their transport animals at the end of the field manœuvres.

(9) FIELD WORKS.

We have learnt from the Boers the same lessons as those taught by the Turks to the Russians in 1877. Field works have always been most important to the attack as well as to the defence, but their importance is not, as a rule, realized by an army until taught by experience.

Owing to the rapidity and accuracy of modern fire cover is more than ever needful for troops. There is, however, no necessity to follow blindly the designs adopted by the Boers for their entrenchments; many of them were constructed essentially for men who had no intention of assuming the offensive or even of keeping up communication with their own comrades. Every entrenchment should be adapted to the ground and locality, to the circumstances under which it can be constructed, and to the object for which it is required. In the attack light schanzes may be sufficient, in the defence of positions deep trenches where the defence is to be passive, light works where it is intended to take the offensive; while in the defence of posts every defensive work should be made as complete as possible.

Obstacles were largely used in this war as in others; barbed wire was in this case found most efficacious and in most parts of the world the locality will supply the necessary materials.

The *demolition* of buildings, bridges, and railway lines, as well as their speedy repair, were often found necessary. It would be an

advantage if infantry could be taught enough about demolition and repairs to enable them to assist in their execution ; but it is in work with the pickaxe, shovel, and axe that the soldier should be most thoroughly practised.

Training.—The construction of trenches (deep and shallow), parapets, walls, obstacles, and simple field bridges should be taught and practised by the company throughout the year. Trench digging and wall building should be practised most regularly, special attention being paid to alignment, defilade, head cover, and concealment. Certain special muscles are developed by digging and shovelling, and unless they are so, the work is very tiring. When, however, these muscles are once developed, the completion of his task becomes of no difficulty to the soldier.

Carrying their tools should be practised as well as the handling of them, and full sized tools should be issued to, and used by, the troops.

Even if issued in smaller quantities, the work got out of them will be far greater. The light tools now issued generally break at the very beginning of a campaign.

The efficiency of each company in constructing cover should be tested during the battalion manœuvres and a challenge prize might be given to the most efficient.

Instruction should also be given in the defence of buildings and villages and in demolitions and repairs to buildings, bridges, and railway lines. If convenient sheds were provided, a good deal of practice in field works could be carried out during the day in the hot weather.

(10) TRANSMITTING ORDERS.

This duty is a most important one, for a mistake in delivering or giving a message may cause most disastrous results. The late campaign has not been free from such mistakes, and has shown further how extremely difficult it is to get messages conveyed at all, as formations are now so extended and the enemy's fire so accurate.

It is therefore all the more important that every man should be able to transmit orders correctly, and a few men in each company should be specially trained for this purpose (see *Orderly Duties*, page 39).

Training.—All non-commissioned officers and men should be practised individually in this duty and also carefully taught the meaning of field signals and bugle calls. An examination in this duty might very well form part of the examinations for the different standards of education.

All orders should, as far as possible, be conveyed by signals.

(11), (12) AND (13) COOKING, CARE OF HEALTH, CARE OF SICK AND WOUNDED.

These duties are, like those of camping and transport, necessities of every military operation, and care displayed with regard to them well repays the commander.

Cooking is a most necessary duty for the soldier, for the men's healths depend very much on the way their meals are prepared.

As regards the *care of health*, the very large numbers of men that fell sick during this war, as they do on all protracted campaigns, show the necessity of men being taught the proper precautions to be taken, and their being impressed with the importance of adopting them. There are generally many more sick men than wounded in all wars; and if the attainment of "superiority of numbers at the decisive point" is the object of commanders, it would seem that as much advantage should be taken of medical as of engineering science in order to protect the troops from casualties.

The work of the ambulance parties during battle is now more difficult than ever. Some knowledge of the proper *treatment of sickness and wounds* should be imparted to every soldier, and many lives may be saved in this way.

Training.—Cooking is gradually becoming one of the soldier's duties, so that now when he goes on service he will be more able to prepare for himself the properly cooked food and the small luxuries which go so far towards keeping an army fit.

General sanitation is now very carefully considered in all military cantonments and camps, and the proper precautions to be taken against sickness are now better understood. Medical officers might be detailed to give some simple lectures to the officers and non-commissioned officers on these points, and practice in carrying and tending the wounded should be carried out regularly, so that every man may know what to do on occasion. This practice could be carried out under cover during the day in the hot weather.

(14) THE CONDUCT OF WARFARE AGAINST AN UNCIVILIZED ENEMY.

This is the kind of warfare most likely to fall to the lot of the soldier in India, and previous experiences have already decided the principles on which it should be conducted.

The Boers have conducted their guerilla warfare on principles similar to those adopted by the frontier tribes, but on a larger scale. They are a mounted enemy, and it has been found impossible to deal with them with infantry. It has been found best to guard the numerous posts with infantry and to use every available horseman to conduct the active operations.

Training.—The training should be carried out regularly throughout the year following the principles already laid down, advantage being taken of regiments and detachments being in the hills to practise them in hill warfare.

SPECIAL DUTIES.

(1) SHARPSHOOTING.

Modern accurate weapons and smokeless powder have much increased the power of individual sharpshooters. They will probably be employed largely in future warfare to cover the movements of

troops by keeping off the enemy's reconnoitring scouts, and to pick off the enemy's gunners and their horses. The training of such marksmen has been considered under the first duty.

(2) WORKING OF THE MACHINE GUN.

Most successful results were obtained by the infantry machine gun. Owing to the large number of casualties that occur among the machine gun detachments more men should be trained as reserves, and every man should, if possible, have some knowledge of how to work the gun. This instruction could be carried out during the day in the hot weather.

The war has illustrated the proper tactical use of the machine gun which is not to supplement the fire of the infantry by an indiscriminate expenditure of valuable ammunition, but to take advantage of certain incidents in the fight when the enemy's infantry or artillery can be caught for a few minutes in close formations to inflict severe loss on them.

(3) RANGE-FINDING.

Any mechanical aid that assists the troops to pick up the range quickly is of immense value, as our men are not naturally good judges of distance. It was generally found impossible to pick up the range by the pitch of the bullets even with the aid of volley firing. More men should be trained in the use of range-finding instruments so as to replace casualties. It would be a great advantage if section commanders could be provided with stereoscopic range-finders which can now be obtained in the form of field glasses. Every company at least should have its own range-finders and instruments.

A great deal of the careful training in musketry which is now carried out will be thrown away if the men are not given means of quickly finding their ranges.

(4) SPECIAL FIELD WORKS.

The presence of a few men with some special knowledge of carpentry, smith's and mason's work, is always a great assistance to infantry in carrying out their field works. A few men in each company should also understand the proper use of explosives. The local R. E. officer might be detailed to give specially selected men some instruction in those field works requiring skilled labour, and arrangements might be made by which these men can be given employment in executing barrack repairs and being paid accordingly.

(5) SCOUTING.

Two descriptions of scouts are required in war—

(1) The scouts used by the company or battalion when moving in the proximity of the enemy. Their duties are to move some hundreds of yards in front, to reconnoitre the ground, to guard against surprise, to keep off the enemy's scouts, and to watch the enemy's movements. They have to keep in touch with their units and are

under the command of their regimental officers. These men should be selected in the regiment for their skill in reconnaissance practice and given some extra training in this duty. They should remain with their units on field manœuvres and on service.

(2) The other description of scouts are those employed by the commanders of a force to discover the enemy's dispositions and explore the country, if possible, far ahead of the main body. These men should form a special corps for the purposes of training, a certain number being attached to each brigade for field manœuvres and service. The corps might be organized for peace in British and native companies. Men for the British companies might be enlisted from all over the Empire with a proportion of men selected from British regiments in India. The native companies should consist of Gurkhas, Pathans, and men whose early lives serve to fit them for this kind of service.

Training.—Six months of the training should be in the field, where reconnaissance duties generally should be thoroughly practised. The details of the training required are well described in Colonel Baden Powell's book on scouting. The success of the training will, however greatly depend on the instructors who will have to be very carefully selected. The men, besides being thoroughly practised in all kinds of reconnaissance duties, should be specially encouraged to acquire a knowledge of the languages of the countries in which they may be employed; of these languages, Hindustani, Persian, and Pushtu are the most important. A certain number should be able to ride and understand the care of their mounts. Full information regarding the countries in which war may have to be conducted should be given to all. The men should also be encouraged to spend their spare time and leave in *shikar* and exploration. Special leave might be given to men wishing to be attached to exploring expeditions. Field glasses (if possible stereoscopic range-finders) should be issued to all, and every man must be made a fair shot and a good judge of distance. Good pay will have to be given to attract good men.

(6) SIGNALLING.

The importance of this duty has much increased under modern conditions, which necessitate very extended formations and increase the difficulties of communicating information and orders. The more men that understand signalling the better. As the war has shown, small detachments are now constantly isolated during the operations, and on such occasions the presence of a man who is able to rapidly communicate information or receive orders may save many lives and greatly assist in the execution of the plans of the distant commander.

Training.—The training, as at present conducted, has proved satisfactory, but brigade signallers should be trained as a special corps, or, if attached to regiments, they should not be part of their strength.

Correct tactical ideas should be instilled into all signallers, so that they may be able to understand the operations in which they take so

important part. For this purpose some time should be devoted to practising signallers together under a brigade signalling officer.

If the Marconi system of wireless telegraphy is introduced, instruction in it might be included in the training of the brigade signallers.

(7) ORDERLY DUTIES.

Owing to the way in which a regiment is now split up in action, and the distance apart its units often are, the difficulty of exercising a proper control is very great, and, as signalling cannot be relied on for conveying all the necessary orders or information, it would seem advisable to have a few men with each regimental and company commander who have received a special training in conveying messages. Those men would be armed with a revolver or carbine only and otherwise very lightly equipped. They should be selected from among the more active men and trained to carry all their messages at a high speed. They should also be taught to ride a horse or bicycle in case the country admits of their being mounted on one or the other.

Signalling and orderly duties being nearly allied to one another, the training for the two might be combined, the same man being made capable of carrying out either duty.

(8) THE TRAINING OF NATIVE INFANTRY.

The training of the recruits of native infantry regiments might be carried out as at present, but special attention might be paid to the following points:—

- (1) *The instruction of the individual recruit.*
- (2) *Judging distance.*
- (3) *Skirmishing.*
- (4) *Marching.*
- (5) *Simple tactical ideas.*

The last four points can best be attended to by taking the recruits out into the country regularly once or twice a week. They will be marched across country, each man in turn being made responsible for the direction. At first only a few miles will be covered, but later on longer distances. At convenient points the men will be halted for practising judging distances and for having explained to them the proper tactical use of roads, villages, woods, etc., in their vicinity. They can also be practised in skirmishing and making proper use of cover as they march.

For trained soldiers the same annual courses as those described above for British troops should be carried out. Physical exercises must be practised regularly by trained soldiers as well as recruits if the men of the regiment are not given to active habits and active recreations should be encouraged. The unit for instructions will be the double company. Native officers and non-commissioned officers should be given separate instruction and allowed plenty of opportunities of incurring responsibility. Their promotion should largely depend

on their self-dependence. Unless more British officers are allowed for native troops, it will be difficult to work regiments up to the high standard of efficiency now required in civilized warfare.

4. THE DUTIES AND TRAINING OF BRITISH AND NATIVE CAVALRY.

The duties of cavalry in war are—

- (1) Mobility.
- (2) Reconnaissance.
- (3) Transmitting orders.
- (4) Accurate shooting.
- (5) Manœuvring.
- (6) Use of lance or sword.
- (7) Raids, surprises, and ambushes.
- (8) Field works.
- (9) The working of the machine gun.

Camping, transport, and convoy duties, cooking, care of health, care of sick and wounded, range-finding, and signalling are duties appertaining to every branch of the army and have already been considered.

Of the duties, *mobility* and *reconnaissance* are by far the most important.

(1) MOBILITY.

The first duty of a cavalry soldier in war is to preserve his mobility, otherwise he becomes comparatively useless. The strain on the cavalry is very great in all wars, the South African campaign being no exception, and in order to meet this strain, a proper training in mobility must be carried out in peace, and really suitable remounts supplied to replace casualties during war.

The cavalry were very badly handicapped in the latter respect during the last campaign.

Training.—To ensure this mobility there are two essential conditions—

- (1) The efficiency of the rider.
- (2) The efficiency of the horse.

(1) The rider must have a firm seat and good hands ; but besides this he must be strong enough to withstand the weariness caused by the great exertions often required of him. A correct military seat is of no use on service unless combined with staying power.

The Boers, Colonial troops, and Yeomanry are most of them natural riders, having been accustomed to the saddle from their boyhood ; but the regular soldier when enlisted has generally had little or no practice in riding, and he therefore, before anything else, requires a hard training before he is fit for the duties of war.

(2) The efficiency of the cavalry horse depends on the way he is groomed, rested, watered, fed, and protected on service. The proper care of his horse, not for show but for work, is therefore the first consideration in this portion of the cavalry soldier's training. Every man should also be trained to a rough and ready way of breaking in new horses, as such horses have often to be supplied to the cavalry when the reserve remounts are used up.

The horse also should be trained for the hard work of war and not for the show parades of peace.

To assist cavalry in preserving their mobility a much lighter equipment must be issued to them, and spare horses or light carts provided for carrying their extra kit.

(2) RECONNAISSANCE.

This duty is a far more important one on service than the manœuvres required in attack and defence. It has already been recognized as such by the Germans, who, ever since 1871, have never relaxed their efforts to perfect their cavalry in this respect.

The Boer war has now impressed its importance on ourselves, and our cavalry training will probably be modified accordingly. As we are preparing our army in India for a war against a European power, our cavalry must be trained so as to be able to hold their own against the highly trained reconnoitring cavalry that they will find themselves opposed to. The organization and system of training adopted by this cavalry should therefore be studied and measures taken accordingly.

If our Generals are to gain the great advantage of the initiative, our cavalry must be superior to that of the enemy from the very commencement of the campaign, and we cannot afford to wait for the early experiences of the war to guide us in so important a matter.

Training.—Individual training in reconnaissance is of the greatest importance. Every non-commissioned officer and man must be taught to use his own intelligence, and more attention should be paid to the training of single men than of units. To make the training real, bodies of cavalry, however small, should always be manœuvred against each other.

Any non-commissioned officer or man showing special aptitude for reporting what he sees and with a good eye for country should be noted for promotion. If the cavalry is to be successful in our next war, the non-commissioned officers must be selected for intelligence as much as for smartness. A certain number of men in each squadron should receive a special training in scouting as in the Russian cavalry, and should be given extra pay while efficient. These men will be employed on the more important reconnaissance duties during the field manœuvres and on service.

(3) TRANSMITTING ORDERS.

This is an even more important duty for cavalry than for infantry and every individual soldier should be practised in it.

(4) ACCURATE SHOOTING.

To enable cavalry to take advantage of the possession of any point that their mobility has enabled them to seize, and to protect themselves when carrying out their detached duties, every man should be a good individual shot, so that a small party may make the most of its numbers.

In this respect our cavalry were much hampered during the war by the inferiority of their carbines compared with the rifles of their enemy. Our cavalry should be armed with a weapon which, though it can still be carried on the horse, will possess greater range and accuracy than the present carbine.

Volley firing does not seem to be of much use to cavalry and might be omitted from the musketry course.

Individual firing should be that most practised on the range; the control of fire can be practised with blank ammunition which should always be issued to cavalry on field manœuvres.

Efficiency in this duty is of course necessary but should be considered as quite secondary to those of reconnaissance and mobility.

(5) MANŒUVRING.

During this war our cavalry have been used very much as mounted infantry, as otherwise we should not have had sufficient mounted men to out-manœuvre an enemy which consisted almost entirely of horsemen. But this would prove a very wasteful method of using it in a war against a European army.

The principal duties of cavalry in the *attack* after they have finished the reconnaissance and can get no nearer to the enemy's position will be to make demonstrations, to deceive or check the enemy, to seize and hold important points that are out of reach of the infantry, to cover the movements of the infantry, and to make wide turning movements with a view to threatening the enemy's line of retreat or to be on his flank in case of pursuit.

In the *defence* they should, if not required for reconnaissance, be used as the Boers used their mounted men, to hold false positions in advance of the real one so as to delay the attack, to watch the flanks, and, if necessary, to cover the retreat.

As regards the cavalry *pursuit*, the experiences of this war have shown how easily the direct pursuit by cavalry can be checked, and against civilized troops the indirect pursuit will generally have to be adopted, the cavalry threatening the flanks and, if possible, the heads of the enemy's column so as to delay them or force them from their proper line of retreat, thus allowing the artillery and infantry of the pursuit time to come up and deliver their attack. The most effectual pursuit will be effected by cavalry well-supported with plenty of light artillery and mounted infantry.

As regards *charging* on the battle-field, the Boers' organization and tactics were entirely unfavourable to such a manœuvre being

executed by our cavalry ; though occasionally, as at Elandslaagte and Diamond Hill, they were able to do so with good effect.

Against oriental troops or an uncivilized enemy, however, a cavalry charge is still most effectual, and in order to attain some larger advantage, it may sometimes become necessary to sacrifice our cavalry, as the German cavalry were at Vionville, by a charge against civilized troops armed with the magazine rifle. But under modern conditions the cavalry charge has become one of its minor duties, and the practice of manœuvring in mass must be given a second place to that of reconnoitring and other detached duties.

Training.—Drills and exercises during peace may be safely restricted to those required for the manœuvres found necessary in war.

Movements in very extended order should be most practised, and small bodies should be trained to move swiftly to indicated points without regular formation, every rider taking his own line, and making the most of natural cover.

(6) USE OF THE LANCE AND SWORD.

The training in the use of these weapons should be carried out in the form of single combats between man and man. Covered riding schools might be provided where classes could go on regularly throughout the hot weather.

As a rifle must now be carried and the equipment is already too heavy, the lance may have to be lightened. Long lances are also very inconvenient weapons to carry out reconnaissances with, and they might be shortened to the length of a hogspear.

(7) RAIDS, SURPRISES, AMBUSHES.

In these the Boers made full use of their mobility and caused us a great deal of loss and annoyance. Raids on the enemy's lines of communication and surprises of his outposts and detached posts help very much to increase that moral superiority of the cavalry which is such an important factor in the success of the operations. The cavalry should be trained to always take precautions against ambushes, and separate parties should be practised against one another.

(8) FIELD WORKS.

The heavier field works required of infantry need not be taught to cavalry. The men should be practised in the use of explosives, the demolition of railways, telegraphs, and bridges, the construction of obstacles and screens for concealing themselves and their horses, and in extemporising cover for themselves from the enemy's fire. Taking advantage of natural cover should be most carefully taught and practised.

(9) WORKING OF THE MACHINE GUN.

A machine gun or Vicker's maxim should be issued to every cavalry regiment, and a certain number of men trained in the working of it.

5. THE DUTIES AND TRAINING OF MOUNTED INFANTRY.

Mounted infantry has not yet been employed by us in any large numbers together in our campaigns on the Indian Frontier. So far the advantages of having a very large proportion of mounted men with a field force have not outweighed the disadvantages accruing from the increase in transport that would be required to carry the extra supplies, and in most of our later campaigns the country in which operations have been conducted has been too mountainous to admit of the employment together of any but small bodies of mounted men.

The late war in South Africa, however, has demonstrated the enormous advantages that a mounted force has over one consisting principally of infantry, although the latter may be numerically much superior.

Mounted infantry will probably prove of great service in any operations conducted in Baluchistan, Southern Afghanistan, or Persia; but the arrangements for the necessary supplies will be difficult, and any mounted infantry that is organized in this country should be fully equipped with the requisite transport, if it is to be ready to fulfil its proper rôle on service.

The tactical use of such mounted infantry would be, in the *attack*, to seize important points, to turn the enemy's flanks, to cover turning movements; or, if in large numbers, to act as a reserve ready to be moved to the decisive point.

In the *defence* they would be used as reserves ready to reinforce any threatened point or to extend the line in order to protect the flanks.

In *retirements* their role would be to cover the retreating troops.

In *pursuit* they would follow in support of the cavalry.

Mounted infantry would also be used to make demonstrations and deceive the enemy as to our real strength and so to cause him to constantly alter his dispositions and complicate his movements.

On the *march* the mounted infantry should be kept together at the head of the column and near the commander, so that they can be used at a moment's notice. They should not be used for reconnoitring duties, unless cavalry is not available.

Training.—The training should be conducted with the above objects in view. All the duties of infantry should be taught, and *marching* especially should not be neglected. In addition the men should receive a training in riding which should be as simple as possible, and it will be enough to teach them one or two formations only.

The men should be carefully instructed in the care of their mounts, including shoeing and the treatment of sore-backs and other injuries.

Equipment.—The men should be armed with the rifle and bayonet and should have the bandolier equipment. Every unit should be

accompanied by some spare ponies to carry any extra kit as great-coats, or blankets, rations, etc., that the men may require at once.

Unless every unit is mobile and independent of ordinary transport for, say, at least a week, it loses much of its value. A few machine guns should be attached to each battalion.

Mounts.—Small hardy ponies should be used, and these must be trained to do plenty of work on little food. Their appearance must be considered of secondary importance to their efficiency.

Organisation.—As mounted infantry is used in war in units quite separate to the battalion, the training and organisation should be separate.

There appears to be no advantage in sending men from each battalion to go through courses in mounted infantry duties with a view to removing them from their battalion in war. The requisite efficiency of men and ponies cannot be attained in this way, and removing men, and often the best men, from their battalions at a time when the battalion's efficiency ought to be at its best seems an unwise economy. Separate corps of mounted infantry are required.

Assuming that one battalion of mounted infantry should be attached to each cavalry brigade and one to each infantry division of the field army, the cheapest method would appear to be to convert one or two British regiments in each command into mounted infantry for the period they remain in the country, and when the regiment leaves India to take its successor for a similar purpose. The remaining battalions might be obtained by converting some of the native cavalry regiments into mounted infantry, or if this method reduces the native cavalry too far, to raise new native mounted infantry battalions.

Cyclists.—A certain number of bicycles should be issued to those British regiments whom it is intended to leave behind in India in case of mobilisation; and the men of the regiment should be taught to ride them. In case of internal disturbances these cyclists will be found very useful to the isolated British battalions left in the country. With a sufficient number of impressed ekkas or light carts, as well as bicycles, each regiment would have its fighting value largely increased.

6. ARTILLERY.

It is not proposed to discuss in any detail the training of artillery, but only some of the lessons taught by the war in regard to the handling of this arm in conjunction with infantry or cavalry.

Artillery is used with infantry to assist the latter in carrying out those duties described under *manœuvring* (that is, in the attack and defence of positions and in retirements).

Attack.—The attack is, as described on page 30, preceded by a reconnaissance. When the Boers occupied prepared positions, as was generally the case, very little seems to have been gained by

using artillery in trying to discover their lines of defence, and concealment being of such great importance to the defenders, it is not likely that they will give away the position of their lines for a few shells, especially as these shells cause very little loss. A demonstration by the more mobile artillery may, however, prove very useful in deceiving the defenders as to the real point of attack.

The attacking force is, as described on page 30, usually divided into three parts, of which the first occupies a position facing the enemy's. Here the heavier artillery may be posted, well-concealed and covered from fire, the larger portion being placed on the flank towards the turning force. No artillery should be left with the reserves, every available gun being required at the front. The more mobile artillery may accompany the turning force. As concealment is of the first importance, this artillery must move quietly and under cover from the enemy's position.

Light artillery should be often practised in marching off the road, and the best device possible should be adopted by which the noise of wheels can be deadened. The advantage gained by using the road and thus saving the horses is counterbalanced if the turning movement is betrayed by the noise and dust.

On arriving at the point from which the infantry will commence their attack, the artillery should, unless a preliminary bombardment is considered necessary, be massed in rear of a favourable artillery position, and the guns run up by hand on to it and fire opened as soon as the signal for the infantry advance is given.

A preliminary bombardment has usually proved a waste of ammunition, unless a definite mark such as a village or wood occupied by the defenders or some exposed guns of the enemy were visible.

When the infantry advance begins, the object of the artillery will be to help the former to gain the position, and this is now best attained by keeping down the enemy's rifle fire with shrapnel. At this stage the concealment of the attacker's guns from the enemy's artillery is of great importance, and is a point that should be specially attended to in peace manœuvres.

A complete system of communication between the light artillery of the turning force and the heavy artillery of the frontal force should be established, so that the heavy gun may assist the light by keeping down the fire of those brigade divisions of the enemy that are inflicting loss on the latter. Trained signallers should accordingly be attached to every brigade division of our artillery.

Defence.—The artillery will in the defence best assist the infantry by keeping down the fire of the attacker's brigade divisions, as any fire directed on the advancing infantry will do them but little harm unless they are in masses. The long range guns of the defence can be best employed in protecting the flanks, and several alternative emplacements should be constructed ready for them. The principal lesson learnt from the Boers is the advantage of constructing proper cover for the guns. Field works have thus become an important

duty for artillery, who, though they themselves may be in too small numbers to construct all the emplacements required for their guns, must be able to supervise their construction.

Retirements.—In retirements isolated batteries or guns of the heavy artillery may be most usefully employed in delaying the enemy while the more mobile artillery may be used to deceive the enemy and draw him from the real line of retreat.

Night manœuvres.—The preliminary movements in the attack have now so often to be conducted by night that artillery should be practised in night manœuvres, and in preparing the gun-emplacements under cover of darkness.

Employment with cavalry.—When artillery is employed with cavalry, its mobility becomes the first consideration. The remarks (see page 40) on this duty apply with equal force to horse artillery. The efficiency of drivers and horses for the exertions of war should be considered of greater importance than parade smartness. This war has not permitted of the bold use of cavalry and artillery together which will still remain a feature of war between disciplined armies.

7. ENGINEERS.

The war has illustrated the extreme usefulness of this branch of the army, but their special training will not be discussed. For employment with cavalry field troops of mounted engineers should be raised ; and to assist in reconnaissance, which, under modern conditions, is now most difficult to carry out, balloons should be provided for the field army and a certain number of engineers trained in their use.

Railway companies are also very necessary. A few sections of engineers equipped with cable carts and air lines would prove a useful adjunct to the field telegraphs now constructed by the Telegraph Department.

8. THE TRAINING OF REGIMENTAL OFFICERS.

A detailed consideration of the training of officers does not appear to be called for by the title of this essay. The regimental officer's chief training will be found in the instruction of his men, for which purpose he will be obliged to instruct himself. This instruction will involve more independent and out-of-door work, and more reading than has hitherto been possible. It was the efficiency and self-dependence of the German regimental officers that brought about a great measure of the success achieved by them over the French, and the same qualities have guided our regiments through the peculiar difficulties of the South African war.

Whenever the regimental officer is given a free hand, he well repays the State for its confidence, to which fact every corner of the British Empire is witness. In war nearly everything depends on his courage and initiative and *then* responsibility cannot be

withheld. During peace, therefore, more responsibility and a freer use of the funds necessary for carrying out the training of his men should be allowed him.

9. THE TRAINING OF NON-COMMISSIONED OFFICERS.

Our British non-commissioned officers should be trained to more self-dependence, as in modern warfare they have often to be placed in positions of considerable responsibility. They should, firstly, be taught their work thoroughly and, secondly, allowed to practise it in peace as they would be required to in war.

(1) The company commander should hold classes for his non-commissioned officers throughout the year, when they should be taught their war duties thoroughly. A course of training is laid down in the drill book, and if sufficient time were given to instructing the non-commissioned officers in all the points there enumerated, they should be well acquainted with the work required of them. The time at present allotted is, however, far too short. Besides receiving instruction non-commissioned officers should be given every encouragement to instruct themselves. Knowledge of the languages and geography of the countries in which war may have to be conducted should be specially encouraged. In their education they should be taught military history and geography; and dictation and reading should be taken always from military books. The examinations for the different standards should contain thorough tests of their ability to understand and repeat orders correctly.

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Non-commissioned officers should remain with the same company throughout the annual training, and if removed for clerkships or other extraneous duties, should be struck off the strength of the training unit for the year.

10. SUMMARY.

The suggestions contained in this essay may be summarized as follows:—

- (1) That the whole year be devoted to the *field training* of the troops and routine duties, be arranged so as to interfere as little as possible with it.
- (2) That the training in all field duties be continuous throughout the year, concluding with several months' practical work in camp, and with field manœuvres conducted under service conditions.
- (3) That the responsibility for the efficiency of each unit be very carefully allocated for the year to certain named

officers and non-commissioned officers, and that these officers be relieved as far as possible of routine duties.

- (4) That *inspections* be principally directed towards testing the *war efficiency* of the units.
- (5) That matters of detail be left more to regimental officers, whose work should be judged by the results achieved rather than by constant reports of the methods they pursue in achieving them.
- (6) That the State allot a larger proportion of funds for the *war training* of the troops than at present.
- (7) That the men and units required to act together in war be trained together in peace.

(4) ACCURATE SHOOTING.

To enable cavalry to take advantage of the possession of any point that their mobility has enabled them to seize, and to protect themselves when carrying out their detached duties, every man should be a good individual shot, so that a small party may make the most of its numbers.

In this respect our cavalry were much hampered during the war by the inferiority of their carbines compared with the rifles of their enemy. Our cavalry should be armed with a weapon which, though it can only be carried on the horse, will possess greater range and accuracy than the present carbine.

Volley firing does not seem to be of much use to cavalry and might be omitted from the musketry course.

Individual firing should be that most practised on the range; the control of fire can be practised with blank ammunition which should always be issued to cavalry on field manoeuvres.

Efficiency in this duty is of course necessary but should be considered as quite secondary to those of reconnaissance and mobility.

(5) MANŒUVRING.

During this war our cavalry have been used very much as mounted infantry, as otherwise we should not have had sufficient mounted men to out-manoeuvre an enemy which consisted almost entirely of horsemen. But this would prove a very wasteful method of using cavalry in a war against a European army.

The principal duties of cavalry in the *attack* after they have effected the reconnaissance and can get no nearer to the enemy's position will be to make demonstrations, to deceive or check the enemy, to seize and hold important points that are out of reach of the infantry, to cover the movements of the infantry, and to make wide turning movements with a view to threatening the enemy's line of retreat or to be on his flank in case of pursuit.

In the *defence* they should, if not required for reconnaissance, be used as the Boers used the mounted men, to hold false positions in advance of the real one so as to delay the attack, to watch the flanks, and, if necessary, to cover the retreat.

As regards the cavalry *pursuit*, the experiences of this war have shown how easily the direct pursuit by cavalry can be checked, and against civilized troops the indirect pursuit will generally have to be adopted, the cavalry threatening the flanks and, if possible, the bases of the enemy's column so as to delay them or force them from their proper line of retreat, thus allowing the artillery and infantry of the pursuit force to come up and deliver their attack. The most effective pursuit will be effected by cavalry well supported with plenty of light artillery and mounted infantry.

As regards *charging* on the battle-field the Boers' organization and tactics were entirely unfavourable to such a manoeuvre being

executed by our cavalry ; though occasionally, as at Elandslaagte and Diamond Hill, they were able to do so with good effect.

Against oriental troops or an uncivilized enemy, however, a cavalry charge is still most effectual, and in order to attain some larger advantage, it may sometimes become necessary to sacrifice our cavalry, as the German cavalry were at Vionville, by a charge against civilized troops armed with the magazine rifle. But under modern conditions the cavalry charge has become one of its minor duties, and the practice of manœuvring in mass must be given a second place to that of reconnoitring and other detached duties.

Training.—Drills and exercises during peace may be safely restricted to those required for the manœuvres found necessary in war.

Movements in very extended order should be most practised, and small bodies should be trained to move swiftly to indicated points without regular formation, every rider taking his own line, and making the most of natural cover.

(6) USE OF THE LANCE AND SWORD.

The training in the use of these weapons should be carried out in the form of single combats between man and man. Covered riding schools might be provided where classes could go on regularly throughout the hot weather.

As a rifle must now be carried and the equipment is already too heavy, the lance may have to be lightened. Long lances are also very inconvenient weapons to carry out reconnaissances with, and they might be shortened to the length of a hogspear.

(7) RAIDS, SURPRISES, AMBUSHES.

In these the Boers made full use of their mobility and caused us a great deal of loss and annoyance. Raids on the enemy's lines of communication and surprises of his outposts and detached posts help very much to increase that moral superiority of the cavalry which is such an important factor in the success of the operations. The cavalry should be trained to always take precautions against ambushes, and separate parties should be practised against one another.

(8) FIELD WORKS.

The heavier field works required of infantry need not be taught to cavalry. The men should be practised in the use of explosives, the demolition of railways, telegraphs, and bridges, the construction of obstacles and screens for concealing themselves and their horses, and in extemporising cover for themselves from the enemy's fire. Taking advantage of natural cover should be most carefully taught and practised.

(9) WORKING OF THE MACHINE GUN.

A machine gun or Vicker's maxim should be issued to every cavalry regiment, and a certain number of men trained in the working of it.

5. THE DUTIES AND TRAINING OF MOUNTED INFANTRY

Mounted infantry has not yet been employed by us in any large numbers together in our campaigns on the Indian Frontier. So far the advantages of having a very large proportion of mounted men in a field force have not outweighed the disadvantages accruing from the increase in transport that would be required to carry the men, supplies, and in most of our later campaigns the country in which operations have been conducted has been too mountainous to admit of the employment together of any but small bodies of mounted men.

The late war in South Africa, however, has demonstrated the enormous advantages that a mounted force has over one consisting principally of infantry, although the latter may be numerically much superior.

Mounted infantry will probably prove of great service in operations conducted in Baluchistan, Southern Afghanistan, Persia; but the arrangements for the necessary supplies will be difficult, and any mounted infantry that is organized in this country should be fully equipped with the requisite transport, if it is to be ready to fulfil its proper rôle on service.

The tactical use of such mounted infantry would be, *in the attack*, to seize important points, to turn the enemy's flanks, to cover turning movements; or, if in large numbers, to act as a reserve ready to be moved to the decisive point.

In the *defence* they would be used as reserves ready to reinforce any threatened point or to extend the line in order to protect the flanks.

In *retirements* their rôle would be to cover the retreating troops.

In *pursuit* they would follow in support of the cavalry.

Mounted infantry would also be used to make demonstrations and deceive the enemy as to our real strength and so to cause him to constantly alter his dispositions and complicate his movements.

On the *march* the mounted infantry should be kept together at the head of the column and near the commander, so that they can be used at a moment's notice. They should not be used for reconnoitring duties, unless cavalry is not available.

Training.—The training should be conducted with the above objects in view. All the duties of infantry should be taught and *marching* especially should not be neglected. In addition the men should receive a training in riding which should be as simple as possible, and it will be enough to teach them one or two formations only.

The men should be carefully instructed in the care of their mounts, including shoeing and the treatment of sore-backs and other injuries.

Equipment.—The men should be armed with the rifle and bayonet and should have the bandolier equipment. Every unit should be

accompanied by some spare ponies to carry any extra kit as great-coats, or blankets, rations, etc., that the men may require at once.

Unless every unit is mobile and independent of ordinary transport for, say, at least a week, it loses much of its value. A few machine guns should be attached to each battalion.

Mounts.—Small hardy ponies should be used, and these must be trained to do plenty of work on little food. Their appearance must be considered of secondary importance to their efficiency.

Organisation.—As mounted infantry is used in war in units quite separate to the battalion, the training and organisation should be separate.

There appears to be no advantage in sending men from each battalion to go through courses in mounted infantry duties with a view to removing them from their battalion in war. The requisite efficiency of men and ponies cannot be attained in this way, and removing men, and often the best men, from their battalions at a time when the battalion's efficiency ought to be at its best seems an unwise economy. Separate corps of mounted infantry are required.

Assuming that one battalion of mounted infantry should be attached to each cavalry brigade and one to each infantry division of the field army, the cheapest method would appear to be to convert one or two British regiments in each command into mounted infantry for the period they remain in the country, and when the regiment leaves India to take its successor for a similar purpose. The remaining battalions might be obtained by converting some of the native cavalry regiments into mounted infantry, or if this method reduces the native cavalry too far, to raise new native mounted infantry battalions.

Cyclists.—A certain number of bicycles should be issued to those British regiments whom it is intended to leave behind in India in case of mobilisation; and the men of the regiment should be taught to ride them. In case of internal disturbances these cyclists will be found very useful to the isolated British battalions left in the country. With a sufficient number of impressed ekkas or light carts, as well as bicycles, each regiment would have its fighting value largely increased.

6. ARTILLERY.

It is not proposed to discuss in any detail the training of artillery, but only some of the lessons taught by the war in regard to the handling of this arm in conjunction with infantry or cavalry.

Artillery is used with infantry to assist the latter in carrying out those duties described under *manœuvring* (that is, in the attack and defence of positions and in retirements).

Attack.—The attack is, as described on page 30, preceded by a reconnaissance. When the Boers occupied prepared positions, as was generally the case, very little seems to have been gained by

using artillery in trying to discover their lines of defence, and concealment being of such great importance to the defenders, it is not likely that they will give away the position of their lines for a few shells, especially as these shells cause very little loss. A demonstration by the more mobile artillery may, however, prove very useful in deceiving the defenders as to the real point of attack.

The attacking force is, as described on page 30, usually divided into three parts, of which the first occupies a position facing the enemy's. Here the heavier artillery may be posted, well concealed and covered from fire, the larger portion being placed on the flank towards the turning force. No artillery should be left without reserves, every available gun being required at the front. The more mobile artillery may accompany the turning force. As concealment is of the first importance, this artillery must move quietly and take cover from the enemy's position.

Light artillery should be often practised in marching off the road, and the best device possible should be adopted by which the noise of wheels can be deadened. The advantage gained by using the road and thus saving the horses is counterbalanced if the turning movement is betrayed by the noise and dust.

On arriving at the point from which the infantry will commence their attack, the artillery should, unless a preliminary bombardment is considered necessary, be massed in rear of a favourable artillery position, and the guns run up by hand on to it and fire opened as soon as the signal for the infantry advance is given.

A preliminary bombardment has usually proved a waste of ammunition, unless a definite mark such as a village or wood occupied by the defenders or some exposed guns of the enemy were visible.

When the infantry advance begins, the object of the artillery will be to help the former to gain the position, and this is now best attained by keeping down the enemy's rifle fire with shrapnel. At this stage the concealment of the attacker's guns from the enemy's artillery is of great importance, and is a point that should be specially attended to in peace manoeuvres.

A complete system of communication between the light artillery of the turning force and the heavy artillery of the frontal force should be established, so that the heavy gun may assist the light by keeping down the fire of those brigade divisions of the enemy that are inflicting loss on the latter. Trained signallers should accordingly be attached to every brigade division of our artillery.

Defence.—The artillery will in the defence best assist the infantry by keeping down the fire of the attacker's brigade divisions, as any fire directed on the advancing infantry will do them but little harm unless they are in masses. The long range guns of the defence can be best employed in protecting the flanks, and several alternative emplacements should be constructed ready for them. The principal lesson learnt from the Boers is the advantage of constructing proper cover for the guns. Field works have thus become an important

duty for artillery, who, though they themselves may be in too small numbers to construct all the emplacements required for their guns, must be able to supervise their construction.

Retirements.—In retirements isolated batteries or guns of the heavy artillery may be most usefully employed in delaying the enemy while the more mobile artillery may be used to deceive the enemy and draw him from the real line of retreat.

Night manœuvres.—The preliminary movements in the attack have now so often to be conducted by night that artillery should be practised in night manœuvres, and in preparing the gun-emplacements under cover of darkness.

Employment with cavalry.—When artillery is employed with cavalry, its mobility becomes the first consideration. The remarks (see page 40) on this duty apply with equal force to horse artillery. The efficiency of drivers and horses for the exertions of war should be considered of greater importance than parade smartness. This war has not permitted of the bold use of cavalry and artillery together which will still remain a feature of war between disciplined armies.

7. ENGINEERS.

The war has illustrated the extreme usefulness of this branch of the army, but their special training will not be discussed. For employment with cavalry field troops of mounted engineers should be raised; and to assist in reconnaissance, which, under modern conditions, is now most difficult to carry out, balloons should be provided for the field army and a certain number of engineers trained in their use.

Railway companies are also very necessary. A few sections of engineers equipped with cable carts and air lines would prove a useful adjunct to the field telegraphs now constructed by the Telegraph Department.

8. THE TRAINING OF REGIMENTAL OFFICERS.

A detailed consideration of the training of officers does not appear to be called for by the title of this essay. The regimental officer's chief training will be found in the instruction of his men, for which purpose he will be obliged to instruct himself. This instruction will involve more independent and out-of-door work, and more reading than has hitherto been possible. It was the efficiency and self-dependence of the German regimental officers that brought about a great measure of the success achieved by them over the French, and the same qualities have guided our regiments through the peculiar difficulties of the South African war.

Whenever the regimental officer is given a free hand, he well repays the State for its confidence, to which fact every corner of the British Empire is witness. In war nearly everything depends on his courage and initiative and *then* responsibility cannot be

withheld. During peace, therefore, more responsibility and a freer use of the funds necessary for carrying out the training of his men should be allowed him.

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ENTRENCHMENTS APPLIED TO FIELD OPERATIONS.
TWO LECTURES DELIVERED AT MEERUT BY MAJOR F. G. BOND, R.E.

Lecture 1.

1. *The subordination of entrenchments to tactical considerations.*
Divisions of the subject—
Passive defence. Offensive-defensive. Attack.
Use of entrenchments to cover retreat. Moral aspect of entrenchments.
2. *Passive defence—*
Plevna, history of the defence up to the investment.
Position of the works and their object.
Defects of passive defence of entrenched camps.
Consideration of the Turkish methods.
Comparison with the Boers, and the South African Campaign.
Lessons of Plevna.
3. *Offensive-defensive—*
Instances where counter-stroke was not delivered.
Fredericksburg. Gravelotte.
Instance of successful use of counter-stroke. Lisaine.
Comparison of two methods, and lessons to be learnt.
Tiers of fire. Boer methods. Obstacles. Flank defence.

Sir Bindon Blood and Gentlemen,—I have been asked to deliver two lectures on entrenchments, and their application to field operations, and it gives me great pleasure to do so, not because I have any infallible receipts of my own, or theories to propound, but because it gives me an opportunity of putting before you, before all things, the necessity for the various arms of the service, and engineers alike, to approach this subject from the widest aspect, and from the point of view which necessarily blends their labours in the cause of the common good of the service.

The lessons of the South African War are numerous, and are as yet in the nebulous state of things still to be fully and dispassionately discussed, but there is a consensus of opinion that entrenchments have received a very large impetus, and that the question is one now of obvious interest to all branches of the army, and which can no longer be relegated to the engineer.

At the same time it must not be thought that the lessons learnt are any new thing, and that ample information was not available long before. That is not the case; I shall endeavour in the course of my lecture to show you that the lessons of the Boer War are the lessons which were ready to our hand from many campaigns, and that all that was lacking was the want of realization of the need and the method of adaptation.

From a very perfunctory study of the battles of the American Civil War, the Franco-German War, and the Russo-Turkish War it becomes evident that the principles of field fortification are universal; the type of works only differs from time to time.

In bygone days there was a clearly defined line between tactics and fortification, and the balance was often ill-sustained, so that it required a Napoleon to bring tactics to its proper level again and to restore the balance.

In these days experience has confirmed the first great principle which governs entrenchments, that they are subordinate absolutely to tactical considerations, and that shelter trenches, of whatsoever form or shape, are worthless and dangerous traps if they are not an intrinsic portion of the plan and scheme by which you mean to win your battle. Unless the tactical facilities and features of the ground have been carefully studied, and the disposition of force arranged to meet tactical considerations, it is idle to consider the arrangement of entrenchments.

Entrenchments, wisely disposed, are an aid to men, but remember that it is the men who repel the assault, or win the battle. The chief thing is the careful selection of the ground and of well-arranged infantry positions.

An ideal position is one that rarely if ever can be found, but positions readily adaptable to defence or the offensive-defensive are plentiful to the mind that grasps the possibilities of artificial aid.

It follows from what I have said that troops should be able always to entrench themselves, and that therefore the right labour to employ is the arm that occupies the ground.

After Plevna the whole of Skobelev's force was armed with spades, and Gall says "so fully had the men become convinced of the value of these tools that, during their struggles through the snow-blocked passes of the Balkans, the spade was the last article they would part with, always excepting their rifles and ammunition. These heavy tools were carried to the gates of Constantinople, yet Skobelev's column was essentially an active and enterprising force!"

The question of the carriage of tools is one which cannot, however, be here discussed, as time will not permit it.

I propose now to consider entrenchments applied to—

- (1) Passive defence.
- (2) Offensive-defensive.
- (3) Attack.

After that we will consider the questions of special applications of types of entrenchments and of their positions.

It must not be forgotten that Napoleon's maxim—*no rule is absolute in war*—is especially applicable to forms of works.

I do not propose to consider separately the use of entrenchments to cover retreat; such use is generally accidental, but often very efficacious, for instance: at Woerth the trenches and abatis on the French left, on the slopes of the Froschwiller heights, in stopping the repeated attacks of the 1st and 2nd Bavarian Corps, helped to prolong the resistance till evening and till the line of retreat was threatened from the right.

Again, at Spicheren, the trenches on the Rothaberg and in the rear of it, combined with the vigorous counter-attacks of Laveaucoupet's division, arrested the Prussian progress until night.

Instances are numerous, and the fact that the Boers on the Tugela managed for two weeks to gradually withdraw their guns, wagons, and stores, and to hold the line of their defence with vastly diminished numbers, so that till the end General Buller imagined he was pushing the whole Boer force aside, may be taken as one of the most brilliant uses of entrenchments under this category.

There is one aspect of field-works which must not be forgotten—the moral effect. It has often been said that the free use of field-works hampers the soldier and destroys his power of initiative. This may be the case with bad troops. History shews that it is not so with good troops. Troops accustomed to use entrenchments in a natural way as a necessary part of their tactical exercises reap all the advantages of the spade and none of the drawbacks. It has even been said that it is fatal to allow any but the best disciplined troops to use entrenchments. The entrenchment is to the soldier what the shield is to the savage. With its aid he can inflict as much damage as a dozen men without it. In the offensive-defensive a proper use of entrenchments assists the attack in another part of the field. It is all this that must be impressed upon the soldier, and his discipline enables him to put it into effect.

There is one last point to be remembered before we go to the question of passive defence; it is that in the disposition of field-works as in any other branch of tactics; Von Moltke's maxim must not be forgotten—*always presuppose that your enemy will do the best thing.*

It never does to underrate your opponent, and instances are not far to seek where disaster has followed the over-confident neglect to make the best use of ground. As the Turks say—"Though your enemy be as small as an ant, yet act as if he were as big as an elephant."

Entrenchments alone cannot decide the issue; you may strengthen your left as Frossard did at Spicheren, or you may, as some assert that he did, neglect to strengthen your main position with entrenchments, but Spicheren was lost because of the faulty reconnaissance of the French, and the utter ignorance of the movements of the enemy. You must be complete at all points; ready to meet and counter every move of the enemy; otherwise the best entrenchments will only for a little postpone the inevitable downfall.

We will now briefly consider the case of entrenchments applied to passive defence, and I must premise that the force that is incapable of assuming the offensive is already beaten. Such was the case of Cronje's army at Paardeburg, when his skilful use of entrenchments in no way averted the result, though it contributed very largely to the saving of life, so that his loss was very small in spite of the terrific bombardment.

I am of course not speaking of defences such as Kimberley and Mafeking, where the defence was conducted of necessity, but rather of the deliberate assumption of the defence alone by an army

capable of more active operations, such as Plevna. Mafeking is an admirable instance of activity in defence, while Ladysmith is a little difficult to understand, if the Boer accounts of their numbers are to be trusted. Ladysmith may be taken perhaps as a case in point, for, without relief from the outside, it is certain that the force would have been too unfit for any great effort, and would have capitulated. Ladysmith may or may not have served a useful strategical purpose; and as regards the fighting of the regiments and batteries, nothing could have been finer; but the question of whether it was right to lock up 10,000 troops in a passive defence, including a fine body of cavalry, must always be one very much open to discussion.

It is true that at Ladysmith there were one or two successful enterprises, with a view to the capture and destruction of particular guns or posts, but there was nothing of the nature of great counter-attack, which alone enables a defence to succeed.

Whether such an operation might not have been undertaken with the whole strength of the force, coincidently with one of General Buller's attempted reliefs, is not for me to say; but this much may be assumed that if the force was unable to make such a counter-attack, the occupation of Ladysmith was not a matter of strategy only, but one of bare necessity.

I must now speak briefly of Plevna, and let it not be thought that I undervalue the magnificent powers of the great soldier who conducted the defence any more than I would belittle those of the gallant defenders of Ladysmith; but in cases like these entrenchments may be exalted to an undue level of significance, and the opportunity of rendering the defence in itself a success at Plevna, and more successful at Ladysmith, was for some reason or other not utilized.

I must ask you to forgive my placing before you an outline of the Plevna campaign before I go more definitely into the question of the entrenchments.

It was in July 1877 that the Russians crossed the Danube and occupied Nikopolis; three days later Osman Pasha's advanced guard reached Plevna, a small open Bulgarian village, lying among rolling hills, 25 miles to the south of Nikopolis. Next day a Russian force under Schilder-Schuldner, with perfectly unpardonable neglect of reconnaissance or any proper use of cavalry, blundered on the Turks who shelled his column from Grivitza.

Next day the Russians attacked and learnt for the first time the effect of the Turkish rapid firing, being defeated with a loss of 2,800, or one-third of the force engaged.

This was the first battle of Plevna. Beyond a few shelter-trenches at Grivitza, and a liberal use of the houses and garden walls, there was no use of entrenchments made in this battle.

It was now that Osman decided to occupy Plevna in strength, and during the next ten days considerable works were raised to the east and south of the town, and Russians, who had occupied Lovtcha, 20 miles to the south, were driven out after six hours, hard fighting.

The Turks numbered 35,000 men, and the Russians reinforced to 30,000 men with 176 guns attacked Plevna again on the 30th of July.

They attacked in three columns, independently ; the right attack under Krudener failed ; the centre attack under Shakoffskoi, made on three lines of works, held by superior numbers, was made most gallantly, and the 1st line was actually won after desperate fighting. The Turks abandoned the 2nd line, but the Russians, defeated by a terrific fire from the 3rd line, were driven out in a disordered rout by the Turks.

The third column under Skobelev on the left saved Shakoffskoi from annihilation by pushing forward and occupying the Green Hills, afterwards famous for his great attack. He effected his purpose, and held on till dark, losing 50 per cent. of his force, while the whole Russian loss was 7,500, or one-fourth of the force engaged.

The position of the Russian army was now for some days precarious, and had Osman Pasha not become imbued with that dangerous love of entrenchments so fatal to a defence, matters might have gone hard with the Russian right wing. Within a few days Russian and Roumanian reinforcements arrived, raising the strength of the force before Plevna to 75,000 men and 388 guns.

After that no forward movement was possible for the Turks, but it was not till the 31st of October that the place was completely invested. Of the third attack and defeat of the Russians I must speak later on : of the other incidents of the siege we have not time now to speak.

It was only after the Russians had been forced to meet entrenchment with entrenchment, when Todleben, the hero of Sebastopol defence, had been brought to apply his master-mind to the problem and had surrounded the place with a chain of works, occupied by 120,000 men, that Plevna was reduced, and Osman himself wounded with over 40,000 men and all his guns and stores surrendered at discretion.

The placing of the works round Plevna had been most skilful. The 2nd Grivitzka redoubt had been so well concealed by the maize growing in front that, until the 1st redoubt was taken, the Russians were not aware of its existence, and the capture of the 1st, which was believed to be the key of the position, was rendered almost valueless.

The Turks, being short of artillery, made every endeavour to give effect to rifle fire, occupying tactical points with redoubts, and by tiers upon tiers of light trenches on front and flanks giving a great development of fire. Besides this, head cover everywhere was provided, so that the Turks, sitting under their shelters, were protected until the critical moment.

The parallel case of the Boer awaiting the gallant advance of the British Infantry over the open in his hollowed trench is complete to that point where the slim Boer found his trenches untenable and discreetly left them.

There was at Plevna a great want of the use of obstacles than which there is no more admirable adjunct to the defence, even if it be

only the tripping wire so terribly serviceable to the Boers at Magersfontein.

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They must be used as moves only in the great strategic game. The holding of works must never be put before the best use of men ; so long as their occupation is of real advantage to the application of the force, they may be of vital importance, but the moment their longer retention endangers the safety or utility of the force within, the folly of clinging to them cannot be overrated.

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It is obvious, I think, that though the South African War gives us no object lessons in the way of complete examples on the part of the Boers of successful counter-stroke that a portion of this lesson is rendered vividly obvious by the extraordinary development of the power of modern rifle fire. There is no doubt now that it is possible to entrench certain portions of a defensive line in such a way as to entirely deny them to the attack, and also that by using troops widely distributed in trenches immense economy can be effected.

It may not be given to other armies to have the mobility which enabled the Boers to utilize one and the same reserve at any portion of the defensive line over miles and miles of country, but the lesson is the same. The mobility of the Boers enabled them to hold the line of a larger force, but their relative paucity of numbers limited their counter-attack.

In dealing with our problem we must assume that the enemy has the necessary force distributed in reserve with the right proportion of great reserve ready at the time and moment to move when the attack fails.

Can anyone doubt that the orderly retirement of the British from Spion Kop would have been a disorderly and miserable rout had not some providence, either the high-souled magnanimity of Joubert or the want of training and numbers in the Boer army for the counter-attack, intervened?

The proper and the best use of field-works has been aptly described in relation to its value and object, by the simile of a trained swordsman who relies for his defence on certain guards and for offence on certain cuts.

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The Turks numbered 35,000 men, and the Russians reinforced by 30,000 men with 176 guns attacked Plevna again on the 30th of July.

They attacked in three columns, independently; the right attack under Krudener failed; the centre attack under Shakoffskoi, made of three lines of works, held by superior numbers, was made more gallantly, and the 1st line was actually won after desperate fighting. The Turks abandoned the 2nd line, but the Russians, defeated by a terrific fire from the 3rd line, were driven out in a disordered retreat by the Turks.

The third column under Skobelev on the left saved Shakoffskoi from annihilation by pushing forward and occupying the Green Hill afterwards famous for his great attack. He effected his purpose and held on till dark, losing 50 per cent. of his force, while the whole Russian loss was 7,500, or one-fourth of the force engaged.

The position of the Russian army was now for some days precarious, and had Osman Pasha not become imbued with that dangerous love of entrenchments so fatal to a defence, matters might have gone hard with the Russian right wing. Within a few days Russian and Roumanian reinforcements arrived, raising the strength of the army before Plevna to 75,000 men and 388 guns.

After that no forward movement was possible for the Turks, for it was not till the 31st of October that the place was completely invested. Of the third attack and defeat of the Russians I cannot speak later on; of the other incidents of the siege we have not time now to speak.

It was only after the Russians had been forced to meet entrenchment with entrenchment, when Todleben, the hero of Sebastopol defence, had been brought to apply his master-mind to the problem and had surrounded the place with a chain of works, occupied by 120,000 men, that Plevna was reduced, and Osman himself was left with over 40,000 men and all his guns and stores surrendered at discretion.

The placing of the works round Plevna had been most skilful. The 2nd Grivtza redoubt had been so well concealed by the trees growing in front that, until the 1st redoubt was taken, the Russians were not aware of its existence and the capture of the 1st, which was believed to be the key of the position, was rendered almost valueless.

The Turks, being short of artillery, made every endeavour to give effect to rifle fire, occupying tactical points with redoubts, and the tiers upon tiers of light trenches on front and flanks, giving a great development of fire. Besides this, head cover everywhere was provided, so that the Turks, sitting under their shelters, were protected until the critical moment.

The parallel case of the Boer awaiting the gallant advance of the British Infantry over the open in his hollowed trench is complete to that point where the slim Boer found his trenches untenable and correctly left them.

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It follows from this that a position so strongly fortified on front and flanks, as to be practically continuous, is bad. History goes to

show that defence conducted on such principles has rarely succeeded.

Nevertheless it is good to make your defensive zone as strong as art will make it. Clear the front and give the utmost facility to fire and to communication while preserving if possible your invisibility, and adding such obstacles, especially those which may be unseen from the front, as will check an attack where it can be best totally destroyed.

Troops, widely extended, in well-made shelter-pits, protected by a good obstacle somewhere well under fire within 800 yards, may be regarded as practically unassailable.

Using smokeless powder and well concealed, so that the difficulty of ranging for the enemy is almost insuperable, the fire of the defenders guns and rifles need not necessarily be seriously shaken before the attack approaches.

The lessons of the offensive-defensive from the American War are numerous, for both sides got to utilize entrenchments as a matter of course. The lessons from the battles in that war are our lessons today. Let us consider for a few minutes the case of Fredericksburg, so well told in Henderson's Tactical Study, where it cannot be believed that Lee intended defence alone, but where the counter-stroke was not delivered.

The length of Lee's line was 11,500 yards, and he had 68,000 men, or about six per yard.

His left was naturally strong and watched by cavalry. One division only was therefore posted here. Then came the salient of Marye's Hill fronting Fredericksburg, the river running parallel to the confederate line and from 1,000 to 2,000 yards away. Two divisions were posted at Marye's Hill, and the position was artificially strengthened with entrenchments and by utilizing the existing wall. The re-entrant of the centre, flanked by bastion-like spurs, was thinly occupied by 13,000 men. On the right the weaker flank, where the greater width of the plain in front gave the enemy room to deploy, was massed a whole army corps, with a strong division of cavalry on the flank.

The position of the Confederates along densely wooded hill and ravine, at the battle of Fredericksburg, lacked one thing, and that was facility for a great counter-stroke.

Into the details of the attack and the defeat of the Federals we have not time to go; it suffices to say that from eleven in the morning until darkness set in some 7,000 men behind the stone-wall and the entrenchments of Marye's Hill repelled the attacks of 30,000 Federals with terrible slaughter. Of the gallant Irish Brigade the Federals lost 937 out of 1,200 officers and men in one attack alone.

On the right some portions of the position, tangled and marshy forest, would have been better strengthened and held. The Confederate fight was hard, and might have been harder still, had the Federal leaders but reinforced the 10,000 who made the attack, but there too the attack, after some success, failed.

Lee has been justly blamed for not attempting to complete his work after the repulse of the northern force.

It has been pointed out that had he been able to capture or annihilate Burnside's army, the cause of the Confederates would have been well-nigh won. European recognition and the raising of the blockade would have followed, and the Union States might have accepted the position as inevitable.

The enemy, the finest body of troops under the northern flag, should never have been allowed to escape to form the nucleus of the force that won Gettysburg and eventually crushed the Confederacy.

The action of Bazaine at Gravelotte is another case of failure to use the counter-stroke.

The French left was strongly entrenched. The 2nd and 3rd Corps, forming the left and left centre, had each a triple row of connected rifle-pits, tier above tier, with numerous gun-pits and covered communications.

Many advanced posts were fortified, and woods difficult to traverse were partly held. These two French corps must have had from 40,000 to 50,000 men strongly entrenched on a front of 4 miles, yet not a man was withdrawn to form a reserve for a counter-stroke.

When the attack on St. Privat by the Guard Corps failed at 6 P.M., nothing but small counter-strokes, capable of being repelled by the German artillery, were attempted, and yet had Bazaine properly utilized his entrenched defensive zone to free a powerful counter-stroke at this time, it is certain that matters might have gone far differently, at least for the time.

No army intent on victory may ever act entirely on the defence, and therefore entrenchments designed entirely for the defence of a position are designed to sacrifice what should be the end and object of every battle.

One principle holds good, whether for defence or attack, in the arrangement of entrenchments. They should be applied to that part and that part only of the line where it is desired to thin the line, in order to supply the means for bolder work elsewhere.

Let us now examine a case where the counter-stroke was made and succeeded.

The battle on the Lisaine was fought towards the end of the Franco-German war. The 3rd German covering army was retiring eastward before superior French forces under Bourbaki. At the moment Von Werder's most pressing duty was to cover the siege of Belfort.

He resolved to offer battle on the Lisaine, and for various reasons to occupy a front of $11\frac{1}{2}$ miles facing west from Montbéliard on the south to Frahier, to the north, having for the purpose only 45,000 men and 146 guns.

The French force was double but deficient in transport. The French depended for transport on the railway approaching Belfort from the south-west, so that their line of advance was known.

The left of the German position from Montbéliard to Hericourt in the centre was protected by the Lisaine along the front, the water

being deep at that portion, and also by the railway embankment east of it.

The country was much wooded, and the paths slippery and bad for marching from the frozen snow.

The lateral communications of the German position were bad.

Von Werder strengthened the whole of the left and centre of his position by breaking up the ice of the river, and making shelter trenches and wire entanglements. The trenches at some points were in two tiers. Woods were cut down, abattis made, roads barricaded, and houses put in a state of defence.

The troops were posted along this defensive zone in such a way as to leave very strong reserves ready for emergency behind the left and centre. It was further ordered that any troops withdrawn to reinforce portions of the front were at once to rejoin the main reserves when the necessity for their detachment was over.

Bourbaki determined to engage the Germans along their front and turn their right. He therefore concentrated three corps on a front of $4\frac{1}{2}$ miles opposite the German centre and left, under the impression that their right extended little beyond the point where their centre really rested.

Bourbaki advanced "left shoulder up", but very early his left turning movement was delayed by the badness of the roads, and was stopped by the German fire. The operations terminated for that day, but the following day the French left, reinforced, pushed back the Germans towards Frahier, their right flank, but could not cross the Lisaine. The French centre attack commenced, without waiting for the turning movement, not knowing of the delay. The Germans reinforced their centre and left, as need occurred, these reinforcements returning as previously arranged to the main reserves as soon as they had assisted in beating off the French.

As soon as the reserves were no longer required to assist the frontal defence, they were moved to the right, and after a fierce encounter with the French flanking force, they, with the troops already there, stopped this movement, and before long caused the retreat of the entire French force.

Von Werder had made his left defence depend on a rather thin line of troops entrenched, and his right on a force held in readiness for the counter-stroke.

The strongly entrenched left and centre had enabled him to utilize every available man on the right, where the position was open for aggressive action.

Had this not been done, the great numerical superiority of the French must have told.

As it was, the German right was only just sufficient to effect its purpose. But the French, finding their flank attack repelled, abandoned all further attempts on the position and retreated.

The entrenchments on the left and centre were of the utmost use, in that they permitted the formation of the strong reserves which were able to defeat the enemy.

The comparison of the actions at Gravelotte and the Lisaine is exceedingly interesting, as the strongly entrenched zone on the centre and left is common to both. In one case, though equally successful locally, the advantage gained was entirely thrown away, because the entrenchments were not part of a settled plan, but were constructed solely for the purpose of repelling the strength of the frontal attack, which was believed to be the main attack. In the other case the entrenchments were made with the definite intention of freeing a large reserve, previously arranged, for the aggressive action which decided the day.

The following quotations from Brialmont accurately sum up the case for the offensive-defensive use of entrenchments: "A skilful general will always select positions * * * * so as to strengthen part of his front; that he may occupy it with fewer troops, and concentrate the bulk of his forces on the part which is disposed for offensive operations." In this he was speaking of a general, who has lost the initiative. In the following by the same author there is a wider application: "The object of fortification on the defensive front is to keep the enemy in check as long as possible without employing many of one's own troops."

I propose in my second lecture to speak more fully on the subject of types of entrenchment, and especially of the class of shelter-trench utilized by the Boers; but with reference to the illustrations I have taken from Plevna, the American War, the Franco-German War, and South Africa, there are a few points which I will notice here briefly as I pass.

It will be remembered that in all these instances entrenchments were arranged to give tiers of fire.

In this the Boers have been credited with great skill in the utilization of the ground, and it is undoubtedly an excellent means of increasing the power of the defence, while it enables the defenders to search every nook and cranny of the ground over which the attackers must advance.

Again, judicious use was made of obstacles, except at Plevna, though there, owing to the excellent arrangements made for the development of infantry fire and the extraordinary rapidity of fire employed, the Turks managed pretty well without them.

Many writers concur in the view that where it is desired to defend a flank otherwise open, as a purely defensive measure, the entrenchments or redoubts must be on a line thrown back. This, however, renders enfilade possible, unless the position falls behind the crest, so that the flank is hidden.

If there is any danger at all from enfilade fire, some form of traverse must be designed, and for this the Boer method of short trenches with small traverses wherever the length exceeds 6 feet are useful.

I must protest here against the rubbish that has been talked and written by officers about the British methods before this war.

We have been accused of constructing long trenches open to attack. We have as far as I know (and I have the experience of twenty years' regimental duty, passed constantly in touch with the infantry and other arms) never done anything so foolish. It is true that our trenches have lacked depth and been often too visible, but without invisibility has been taught and often obtained; and as regards the position and line of the trenches, we have always been governed by precisely the same considerations as the Boers. The fault has been that entrenching has not been sufficiently recognized as a necessity, solely because on all hands we have feared the weight of the spade.

I hope in my next lecture to take up the question of entrenchments in the attack, types of entrenchments, especially with reference to Boer trenches, the best positions of entrenchments in attack and defence, and some few minor questions connected with this question.

I trust that so far I have led you to the point that entrenchments are and have been for a very long time an intrinsic part of the tactical game, and that the commander, who neglects to consider every possibility of the ground as part of his definite scheme, gains so many more points to his adversary and renders his own chance of success so much the more remote. I now have only to thank you for so kindly listening to what I fear has been offered in a crude form, and the matter of which has often been better stated.

Lecture 2.

1. *Comparison of success of passive defence, offensive-defence, and attack.*

2. *Entrenchments used in attack.*

The American War. Atlanta Campaign.

The offensive and defensive zones.

Wilderness Campaign.

Comparisons with South African War.

Use of gun-pits.

3rd *Battle of Plewna—*

Skobelev's attack.

Reasons for failure.

Necessity for field telegraphs and for unity of scheme in attack of general columns.

Methods of the Russian attack entrenchments and saults.

3. *Discussion of the Boer trenches and methods. Suitability for defence. Unsuitability for attack.*

Experiments made in India.

General aspect of entrenchments in attack. Defence of villages and buildings.

Consideration of effect of field guns and guns of position on entrenchments.

Enfilade of Boer trenches and use of deep trench in attack by British.

Frontier defences.

Summary.

Sir George Luck, Sir Bindon Blood, and Gentlemen,—In my first lecture on entrenchments I had the pleasure of putting before you first of all the essential subordination of entrenchments to tactical considerations, and I tried to show that the principles that govern the application of entrenchments to the battle-field are universal.

We then considered the question of passive defence and the folly of clinging to entrenchments after their retention has ceased to assist in the safety and best utilization of the forces behind them. We considered the example of the defence of Plevna with some consideration of the Boer War.

From that we passed to the use of entrenchments in the offensive-defensive, and I trust that I did not lead you to suppose that the offensive-defensive is necessarily the best form of tactics. Any such suggestion is not only beyond my scope, but also is not borne out by history.

In papers by an able officer of my own corps, Colonel M. Goldie, from which I have taken a great deal of my matter and many suggestions, I find a hundred of the most modern battles tabulated, comprising all the well-known actions of the two last centuries. In these it is shewn that only fifteen times out of the entire hundred was the defence successful.

We may, I think, be guided to some extent at once by the fact that of these fifteen successful defences, no less than nine are instances of the success of the great counter-stroke, while the other six were all due to exceptional causes, and in more than one case the repulse of the attack was followed by a general advance of the force on the defence.

There are in the list nineteen battles where the defence occupied a position which, including the flanks, was wholly fortified either by nature or by art; in these nineteen battles, two only were indecisive; in seventeen the attack succeeded. This, I think, disposes of the case for passive defensive.

The case for the offensive-defensive is strong as far as it goes; there are seventeen battles in the list where the position was fortified partly, and where there was a free offensive zone; the proportion of success to the defence was, in this class of fight, one in three.

It is evident that there is a very large preponderance of success to the attack, but that the proportion is very largely affected by the application of entrenchments, for, whereas the success of the defence in

We have been accused of constructing long trenches open to enfilade. We have as far as I know (and I have the experience of twenty-five years' regimental duty, passed constantly in touch with the infantry and other arms) never done anything so foolish. It is true that our trenches have lacked depth and been often too visible, but throughout invisibility has been taught and often obtained; and as regards the position and line of the trenches, we have always been governed by precisely the same considerations as the Boers. The fault has been that entrenching has not been sufficiently recognized as a necessity, solely because on all hands we have feared the weight of the spade.

I hope in my next lecture to take up the question of entrenchments in the attack, types of entrenchments, especially with reference to Boer trenches, the best positions of entrenchments in attack and defence, and some few minor questions connected with this question.

I trust that so far I have led you to the point that entrenchments are and have been for a very long time an intrinsic portion of the tactical game, and that the commander, who neglects to utilize every possibility of the ground as part of his definite scheme, gives so many more points to his adversary and renders his own chances of success so much the more remote. I now have only to thank you for so kindly listening to what I fear has been offered in a crude form, and the matter of which has often been better stated.

Lecture 2.

1. *Comparison of success of passive defence, offensive-defensive, and attack.*

2. *Entrenchments used in attack.*

The American War. Atlanta Campaign.

The offensive and defensive zones.

Wilderness Campaign.

Comparisons with South African War.

Use of gun-pits.

3rd Battle of Plevna—

Skobelev's attack.

Reasons for failure.

Necessity for field telegraphs and for unity of scheme in attack of general columns.

Methods of the Russian attack entrenchments and faults.

3. *Discussion of the Boer trenches and methods. Suitability for defence. Unsuitability for attack.*
Experiments made in India.
General aspect of entrenchments in attack. Defence of villages and buildings.
Consideration of effect of field guns and guns of position on entrenchments.
Enfilade of Boer trenches and use of deep trench in attack by British.
Frontier defences.
Summary.

Sir George Luck, Sir Bindon Blood, and Gentlemen,—In my first lecture on entrenchments I had the pleasure of putting before you first of all the essential subordination of entrenchments to tactical considerations, and I tried to show that the principles that govern the application of entrenchments to the battle-field are universal.

We then considered the question of passive defence and the folly of clinging to entrenchments after their retention has ceased to assist in the safety and best utilization of the forces behind them. We considered the example of the defence of Plevna with some consideration of the Boer War.

From that we passed to the use of entrenchments in the offensive-defensive, and I trust that I did not lead you to suppose that the offensive-defensive is necessarily the best form of tactics. Any such suggestion is not only beyond my scope, but also is not borne out by history.

In papers by an able officer of my own corps, Colonel M. Goldie, from which I have taken a great deal of my matter and many suggestions, I find a hundred of the most modern battles tabulated, comprising all the well-known actions of the two last centuries. In these it is shewn that only fifteen times out of the entire hundred was the defence successful.

We may, I think, be guided to some extent at once by the fact that of these fifteen successful defences, no less than nine are instances of the success of the great counter-stroke, while the other six were all due to exceptional causes, and in more than one case the repulse of the attack was followed by a general advance of the force on the defence.

There are in the list nineteen battles where the defence occupied a position which, including the flanks, was wholly fortified either by nature or by art; in these nineteen battles, two only were indecisive; in seventeen the attack succeeded. This, I think, disposes of the case for passive defensive.

The case for the offensive-defensive is strong as far as it goes; there are seventeen battles in the list where the position was fortified partly, and where there was a free offensive zone; the proportion of success to the defence was, in this class of fight, one in three.

It is evident that there is a very large preponderance of success to the attack, but that the proportion is very largely affected by the application of entrenchments, for, whereas the success of the defence in

the whole hundred is only one in seven, that of the defence in the case of partly entrenched positions is one in three.

It may therefore be assumed as a principle that when it is necessary to act on the defensive, every possible artifice should be employed to strengthen one portion of the position, so that a thin line of troops may hold it strongly, and so free a large force of troops for the counter-stroke.

The case, however, is strongest for the attack, and therefore the great problem for all soldiers must be—how to conduct the attack. Troops trained to carry out an attack successfully under the conditions and limitations imposed on them by the enormous power of modern rifle fire will have no difficulty in making the best use of the position when necessity obliges the defence.

It goes without saying that where it is possible to circumvent the enemy, to manœuvre him out of his chosen position, as Cronje was induced to leave Magersfontein before Paardeburg, it will always be done; but there may be great occasions, and there always must be partial or little ones, phases in the battle, or attacks on rear-guards, etc., where it will be necessary to attack in front. It is this frontal attack by means of entrenchments which it is our business now to consider.

We may, I think, take it as an axiom that where natural cover does not exist, protection must be given by the spade, entrenchments of such a form as time will permit being thrown up even under fire.

Such entrenchments were first spoken of in the American War on the second day of the battle of Chancellorsville on the 3rd May 1863. After that day this kind of cover became frequent throughout the war in the offensive as well as on the defensive, until the last fights in March 1865 round Petersburg, where it is stated that, in a slowly-effected change of front by a division, two lines of flying trenches were almost completed, and in turn abandoned within an hour.

From the South African War I am afraid it must be admitted that very little light is thrown upon the question of attack entrenchments, though no doubt time will show that excellent use was made of natural cover.

When the Tugela was won, it was won by the great strategic move in the Orange Free State. If we put the pieces back on the board, and give the Boers the same number of knights and pawns as Lord Roberts and General Buller, the tactical lesson we want is not discoverable. Possibly the offensive-defensive would have been called in to play, and certainly attack entrenchments would have been more utilized.

One thing only we can learn, and learn with every satisfaction, and that is, that there is no infantry in the world more ready to advance in the face of pitiless fire of a strong defence than our British infantry. And I doubt not that where they lead, our native infantry will not be far behind. We may therefore assume that the moral effect of entrenchments in the attack, I mean as a deterrent to the advance, may be discarded. Troops, as a rule, trained to take natural cover, are not found to be tied to the ground by entrenchments when it is necessary to advance. It is even said that the moral effect of the knowledge that they are leaving entrenchments behind them, available again if a

retirement is necessary, strengthens the attack. All we lack therefore is practice.

At the battle of Chancellorsville, of which I have already spoken, Lee, finding his opponent, Hooker, entrenched, at once threw up a line of parallel entrenchments. Thinly manning these works, Lee held Hooker to his front, while a force under Jackson proceeded to turn the Federal right. This method of attack was greatly elaborated by Sherman in the Atlanta campaign.

I must apologize to those of you who know the details of this campaign well for detaining you for a little while I bring it again to your remembrance. My excuse is that, as an example of attack by means of entrenchments, it holds the first place and cannot be ignored.

In the Atlanta campaign Sherman started from Chattanooga with a force of about 100,000 men and 254 guns.

His objective was Atlanta, the last great Confederate stronghold in the west. The Chattanooga-Atlanta railway was his means of supply.

The Confederates under Joseph Johnston numbered about 42,000 with 112 guns, but had some hope of drawing reinforcements from the south, should sufficient defence be offered to gain time.

Johnston therefore decided to defend a series of entrenched positions, hoping that by the time the neighbourhood of Atlanta was reached, he might be sufficiently strong to assume the offensive.

The Confederates took up their first position on Tunnel Hill, about 12 miles south-east of Chattanooga, and entrenched their front and their right flank.

Sherman, advancing with three columns, threw up a parallel line of entrenchments to hold the front, and sent the right column 12 miles to the right front to operate through the Snake Creek Gap, the only pass available through the hills running south from Tunnel Hill.

This flank attack, being deceived by a demonstration of the Confederate cavalry, entrenched and awaited reinforcements.

Sherman personally accompanied these and attacked Johnston who, finding his communications threatened, retired.

These operations took about eight days. The Confederate force now retired beyond the threatened point and again entrenched near Resaca with their right and left resting on the rivers—Conasauga and Oostenula. The Confederates made an attack on the Federal left, but were repulsed.

The Federal force then, as before, entrenched in a line parallel to the general alignment of the Confederate entrenchments, but overlapping their left and attacking on this flank strongly caused them to retire further south.

10 miles further south the Confederate army again entrenched, but Johnston, thinking the Federal advance too menacing, declined to defend these lines and again retired.

At Cassville, 12 miles again to the south, 3 miles of entrenchments were constructed, but were also abandoned.

On the 21st day from the time they left Chattanooga the Federals arrived in front of the next Confederate position at New Hope

Church, a point about 85 miles by the railway from Chattanooga. The rate of progress had so far been at an average of about 4 miles per day.

The Federals at once commenced counter-works as before, but sent a force to endeavour to turn the Confederate left. This flank attack lost its way—a thing which very often happens to flank attacks, such as when the disaster occurred to the Highland Brigade at Magersfontein. The Federal attack came unexpectedly upon the works, concealed by thick scrub on the hills, and was repulsed with heavy loss.

The Federals now endeavoured again to overlap the Confederate right wing by entrenchments, which Johnston perceiving tried to prevent by extending his own trenches to the right. Being inferior in numbers and in entrenching tools, the Confederates were beaten in this struggle, and a force was detailed to make a counter-attack on the Federal left.

Passing the left of the Federal line of entrenchments, this counter-attack discovered a Federal division entrenched at right angles to the main line and was forced to retire.

As the Federal trenches now completely out-flanked the Confederate right, Johnston again retired to a position about 2 miles further back from Lost Mountain on the west, to Brushy Mountain on the east.

As before, the Federals threw up parallel entrenchments, but at the same time endeavoured to outflank the Confederate right, causing the latter to retire and again entrench at Rennshaw Mountain.

Again, the Federals entrenched and closer than before, and again outflanking the Confederates, caused the retirement of their right.

Again, the same tactics of entrenchment and counter-entrenchment were pursued. Nearly four weeks had been occupied since the Federals had arrived at New Hope Church, and the Confederates had disputed the advance of the Federals over some 10 miles of country.

Johnston now sent Hood with two divisions to break through the Federal line of works. This counter-attack actually succeeded so far, but while endeavouring to change front, so as to sweep the line of entrenchments, was badly shattered by overwhelming artillery and forced to retreat.

The Confederates delaying actions had enabled some reinforcements to arrive, and their strength was now 60,000 men and 168 guns.

Sherman now made his one great mistake in his otherwise masterly use of entrenchments in the attack. Whether from impatience, or from inability to restrain his over-zealous troops, is not known, but abandoning his previous attitude, he made a great frontal attack from his trenches. The attack was beaten back with severe losses, variously stated at 2,500 to 6,000, while the Confederates lost only 630 men.

The previous method was now employed again, and a week later the Confederates took up a new position, 5 miles long on the Chattahoochee river.

A Federal flanking movement to the left round the Confederate right seems here to have been rashly advanced, so that for a time it was disconnected, but the Confederates at the moment were embarrassed by a change being ordered in the command, Johnston being replaced by Hood, and the opportunity was therefore partly lost. The intended attack was indeed made, but miscarried.

The Confederates now retired on Atlanta, and the place was virtually besieged. Before, however, it could be invested, the Confederate force slipped away, and Atlanta fell into Sherman's hands.

The fighting between Chattanooga and Atlanta is the finest object lesson history affords of entrenchments applied to the attack, and at the same time it shows also how an inferior force can delay the advance of one superior in numbers and gain time by entrenching a series of positions and combining them with the counter-attack.

Sherman being in greater force, and undoubtedly the better general, always retained the initiative. He invariably arranged his battle-front in two distinct zones—one offensive and one defensive. Nearly the whole of his defensive zone was entrenched; generally he avoided entrenchments where it was necessary to keep his ground clear for a flank attack.

In the defensive zone his troops were constantly beating off counter-attacks and always endeavouring to pin the enemy to his front, while the main endeavour was being made to a flank.

Johnston's retirements and general plan merit some praise, but he merely acted at the lead and bidding of his adversary, and his counter-attacks were never of the nature of the great counter-stroke.

This campaign is an admirable picture of the class of warfare which must become the rule in the action of infantry in time to come, and I think we cannot be wrong in taking it as a model for our own practice in the present day.

The fighting between Chattanooga and Atlanta occupied some 86 days over a distance of about 120 miles, and the losses were about 40,000 on each side.

As a corollary to this campaign, the Wilderness campaign is worthy of notice where Grant, opposing Lee, adopted the system of entrenching his entire front, and then attacking with a frontal attack. Grant never obtained more than a drawn battle, losing in the campaign 53,000 men, while Lee's loss did not exceed 30,000, nor was his army destroyed.

In the case of Sherman's advance, though his enemy succeeded in opposing his purpose for a considerable time, he accomplished his object, and inflicted on Johnston's force an equivalent loss—a rare thing in an attack where no definite victory is gained.

There are two things in addition to the lesson of the shield and the sword which, I think, we may learn from Sherman's method. They are that great patience and perseverance will be called for in the attack of the future, where the defence possesses the enormous advantage of the modern rifle and invisibility, and also that

it may often be necessary to develop entrenchments with a view to overlapping a position before it is safe to launch a flank attack.

The preponderance of numbers unquestionably gave Sherman the initiative, and also the power of utilizing large numbers on the flank; but even so an inferior force was able to inflict serious loss upon him, the moment he made a mistake in the patient and methodical advance.

The power of the defence is now far greater than in the American War, and therefore it behoves the attack more than ever to utilize every possible assistance if it is to gain its end.

The first advance at Colenso of Sir Redvers Buller's force was of the nature of a reconnaissance in force and was in more than one part committed too far. It was not possible that it could succeed as an attack. Again, the seizure and endeavour to hold Spion Kop as the key to the position, without a powerful containing attack, was of the same nature of tactics as the seizure of Majuba, and failed as all such attempts to grasp the fruits of victory without the previous patient preparation must fail. At the same time it must be conceded that the position of the Tugela and the small number of bridges as well as the paucity of pontoons with the British force rendered the task exceedingly difficult.

It will be interesting to learn, when the facts are all a matter of history and open to our scrutiny, whether something more might not have been done in imitation of Sherman's advance to Atlanta, if tools had been available.

It will be noticed that in this question of entrenchments in the attack I have so far made no allusion at all to the preparation of gun-pits. The reason is that I really have nothing to urge in their favour for mobile artillery in the attack. In a very able lecture delivered by Captain Headlam, Royal Horse Artillery, to the officers of the Engineers at Chatham on field artillery attack he said—"I am no advocate of entrenchments for guns either in the attack or defence; certainly not in the attack. For the attack it appears to me that the use of such entrenchments has all the disadvantages that can be mustered against them and none of the advantages: above all, the construction of such cover would deprive the attack of their great advantage, the power of surprising the enemy as to their plan."

Now in this opinion I am in cordial agreement with Captain Headlam as regards the entrenching of field guns in the attack, but I cannot but think that the many instances of the Boer War in which guns-pits have been of great use in the defence, both with the Boers and with our own side, must prejudice the question as regards the defence.

Captain Headlam's view was expressed entirely with reference to field artillery, and perhaps there may be reasons which govern the question for mobile artillery, which do not apply for guns of position.

It is obvious that attacks in the future, when troops are accustomed to the use of the spade and entrench themselves at once automatically

whenever a point may be gained by such action, may assume a form of almost a siege. Guns of position will, when present, no doubt be utilized to batter the point of attack as well as the defence artillery, and such guns may perhaps profit by protection such as entrenchments afford.

It is absolutely necessary for the obtaining of the desired effect as Major May has said "that the fire from guns which are intended to bring about a really shattering effect must be kept up as a strong tempest, unremitting, pitiless, and growing in intensity until at the culminating moment it is at its very fiercest."

To obtain this effect, untouched and unhindered by the artillery of the enemy would suggest that for guns of position in the attack, as well as in the defence, cover, either natural or artificial, may be of very great importance. An interesting example is given in the Proceedings of the Royal Artillery Institution for December 1900 of the use of gun pits in the defence of Ladysmith by the 42nd Battery.

After telling how the guns were ensconced in pits at Cæsar's Camp, the account says: "These gun-pits, Major Goulburn continued, strengthening and improving up to the end of the siege; they developed into a small Sebastapol, were a most important position of the defences on that side, were fought all through under constant and heavy fire with no casualties, and became a favourite afternoon tea resort, where one was certain to meet interesting waifs and strays of the beleaguered city as long as the tea supply held out."

In the third attack on Plevna the artillery of the Russians, guns of position, as well as field artillery, undoubtedly failed, and even the mortars of the Roumanians, similar in their effect to howitzers, were of little value, proving what has been borne out by the experience of South Africa again and again that artillery fire has very little effect on entrenchments. Does this not prove that in the duel of artillery with artillery the side which uses entrenchments has a distinct advantage?

I wish now to speak of the 3rd battle of Plevna—an example of an attack made by the Russians from their own attack entrenchments, where loss and defeat were results of want of systematic plan, and more especially of what I may call sympathetic action.

The third attack on Plevna was made on the 11th of September, the first having been made on the 20th of July. The attack was made as before in three columns, the left attack under Skobelev, having already advanced as far as what is called the 3rd Knoll of the Green Hills, had been pushed back by the Turks. On this morning, in a dense fog, Skobelev, to improve his position, pushed on again to the 3rd Knoll; but when at 2-30 P.M. the fog lifted, his force came under a severe fire from his front and left, so that he had to call for the last local reserve available at the time mentioned. The right and centre attacks were again conspicuous for that most pregnant source of failure; the frittering away of troops by successive independent attacks. One after the other, bodies of troops were sent into action after the critical moment was passed, and like waves which come too late to top their predecessors at their furthest advance they were caught in the backwash and gained no ground.

The Roumanians attacked from the east side with great gallantry, winning the 1st Grivitza redoubt, and only then discovered the second redoubt which rendered their possession of the 1st of little value.

The centre attack under Kriloff managed to push home their attack as far as the first line of works, but for want of reinforcement was obliged to retire at dusk, pursued by the Turks.

Another attack was made in the centre after dark, but was only a repetition of the first.

The left attack by Skobelev was characterized by none of the mistakes which brought disaster to the right and centre, but it was conducted with the reckless bravery of a forlorn hope and was foredoomed to failure, being directed, as Green well says, into a funnel, the flanks of the Russian advance being strongly held by the enemy.

The attack suffered from four sources of weakness. Totally inadequate reconnaissance, want of telegraphic communication, and the consequent want of support from the main reserve, and also it was without entrenching tools.

Making the utmost use of his artillery by a cross fire on the work ahead, Skobelev made his main attack at 3 P.M.

His first line advanced from the 3rd Knoll in two lines of company columns, with a strong line of skirmishers well to the front.

Bands were playing and colours flying, but not a shot was fired. Turning the Turks out of some advanced trenches in the valley they were allowed to advance to within 200 yards of the main works, when a terrible musketry fire from the Turks checked the advance. At once Skobelev sent in his first reinforcement, while the artillery poured in a hot fire over the heads of the infantry.

Reinforced, the attacking line advanced again, but was again checked by overwhelming fire from the Turkish rifles. Skobelev, who had throughout exposed himself so greatly that every man of his staff and escort had been killed or wounded, now placed himself at the head of the residue of his force, and picking up the stragglers and the halted line, inspired them with some of his own wonderful enthusiasm, and leading a last charge, carried the redoubt at the point of the bayonet.

The *Times* correspondent says: "Skobelev picked up the whole mass with a rush and a cheer. His sword was cut in half, his horse shot, himself untouched. He sprang to his feet with a shout; then with a formidable yell the whole mass of men streamed over ditch, over parapet, and swept the redoubt like a hurricane. Their bayonets made short work of the Turks remaining. Then a joyous cheer told that at last one of the defences of Plevna was in the hands of the Russians."

But at once the illusory nature of the success was apparent. The redoubt was only a line of trenches with traverses open to the rear, and enfiladed from both flanks. Further severe fighting took place, and it was 5-30 P.M. and dusk before even this line of works was in the Russian hands. Now the lack of entrenching tools told heavily

on the Russians, and in spite of utilizing bayonets, plates, every means of scooping earth at their disposal, it was totally impossible to establish themselves in the position won. The following morning, they were the focus of the Turkish fire, and attacked again and again by the infantry, at last gave way, a gallant young officer, and a handful of men, who refused to retire, being cut down to the last man. The broken remnants of the left attack were driven back in utter ruin; Skobelev mad with rage and disappointment. The Russian loss was 358 officers and 17,416 men, of whom 76 officers and 7,500 men were killed outright.

Now I give this instance to shew how entirely necessary it is that an attack made to one flank should be an intrinsic portion of the whole scheme. Had the right and centre attacks been made strong containing attacks only, and the whole power of the force been available for the great thrust, reinforcing Skobelev's attack as it became necessary, the defences of Plevna must have fallen.

Further, had Skobelev even been able to establish himself on the ground gained till reinforcements arrived, he might, in spite of his terrible losses, still have succeeded, but he had no entrenching tools. Lastly, all his demands for reinforcements miscarried, because the attacks were independent of one another, and the main reserve was behind the centre standing idle, and there was no telegraph. I do not mean the solid line of posts and wire which we are accustomed to see put up as we advance from place to place in our expeditions; I mean mobile military telegraphs.

All European armies, including the British army, now possess mobile military telegraphs for tactical purposes, without which communication must be interrupted, when atmospheric and other causes such as the visibility of flags and heliographs, or the features of the country prevent the use of signalling.

In Lord Roberts's advance through the Free State the telegraph was in constant use, linking brigade and brigade, and division with division, even batteries with their escorts on a flank sometimes had their telegraph communication.

In India the work of the communication to the base is done, and well done by the Government telegraphs, but we have no mobile military telegraphs.

To show the value European armies attach to military telegraphs, the German army has now a section of telegraphs to every infantry division.

One word on the carriage of entrenching tools. It is an urgent matter, and personally I think every man should carry a light entrenching tool, one a spade, and one a pick, or such a tool as should be at once devised, to take the place of both.

Skobelev's advance to Constantinople gave us the lesson years ago. Under present conditions and with the late experience the necessity is emphasized, so that it is beyond the region of discussion.

The attack entrenchments generally of the Russians were made by the men intended to use them. A company was told off for the

entrenchments of that company, or a battalion for a battalion's front of attack. Work commenced always at dark. When at a distance, the work was done in two reliefs, nearer by the one party. Everything likely to make a sound such as mess-tins was discarded. No smoking or talking allowed.

The front was covered by the three rifle companies of the regiment working, but each company also put out picquets to the front, the number of picquets depending on the proximity of the enemy.

The Russian trenches were very faulty in that they were continuous, and they were no breaks even for the passage of picquets. Counter-attacks were not of course provided for, the general intention being to obtain proximity for a great frontal attack, such as constituted the great and only mistake made by Sherman in the Atlanta campaign.

The general design of the trenches was of the old siege pattern, and no attempt was made to render them invisible. The Turks, therefore, greeted the appearance of new trenches each morning with a hot rifle fire, but did no harm.

I do not think that it will be ever possible in an advance over exposed ground to attempt invisibility at all; parapets of an irregular form will be almost sure to appear, and being there, the width of the trenches is not a matter of great concern.

We will now discuss the Boer trenches as far as the limited information at our disposal enables us.

These trenches, designed entirely for the defence of positions, were arranged throughout with a view to invisibility and to give the utmost effect to rifle fire.

The stiffness of the ground enabled the Boers to cut the front of the trenches vertically, and in some instances, but not by any means in all, the bottom of the trench was hollowed out, in the manner which you all know well, to enable the holder of the trench to utilize it for sitting, lying or reclining, possibly for cooking. The appearance of the trenches at Magersfontein and elsewhere, full of débris of bones, cooking refuse, rags, etc., showed that they were used as the home of the Boer so long as the position was tenable.

At Paardeburg the undercut hollows doubtless enabled the men and followers of Cronje's force to escape the effects of the bursting howitzer shells.

The depth of the trenches was variable, some even 6 feet deep; no doubt very effective against artillery fire, and utilized for defence by making standings of ammunition boxes, of which great quantities were found opened and unopen, at the bottom of the trenches. Others were of 5 feet, 4 feet, or only 3 feet depth. Those that permitted the sharpshooter to stand on the bottom of the trench, or on boxes, and fire over the level of the ground, had no parapet to speak of, the earth being spread in front and behind, and in the case where the grass of the veldt interfered with the field of fire the grass was burnt down.

In such trenches as were of a shallower nature, a small parapet was made and often loopholed.

The width of these trenches is of course one of their principal features.

In all cases where they were adopted without head cover, the width of the opening at the ground line was 2 feet or under; it never exceeded 2 feet.

The hollowing out of the trenches was by no means the rule; it was not done at Magersfontein or the Modder; it was not done by any means generally at the Tugela or at Laing's Nek.

In the trenches round Colenso, Hlangwane, and Ladysmith, the Boers sometimes dug wider trenches, and made large use of sacks filled with earth to provide head cover; but where trenches like the 4 miles of continuous trench at Laing's Nek were designed, probably to resist artillery in the first instance, and long occupation had not permitted of the collection of materials for head cover, the width did not exceed 2 feet.

The Boers were very clever in hiding their trenches, digging them amongst the scrub and mimosa bushes, where they existed, and covering them with branches of trees, and they frequently made them almost invisible by spreading the earth all round.

As regards the position of the trenches and their defilade, the Boers were bound by one rule only. The obtaining of the utmost effect of rifle fire.

They frequently placed a double row of trenches—one at the foot and one near the top of the hill, but always placed so as to command particular portions of the approach.

At Magersfontein there were three tiers in some places.

Where there was a possibility of the trenches being seen from the front, dummy trenches to attract or catch the fire of the British troops were often constructed, and no doubt were very effectual. These were particularly noticeable on the plateau between Hlangwane and Monte Christo.

The length of the trenches, in many places only 6 feet, or as at Paardeburg from 10 feet to 12 feet, was in itself their protection from enfilade fire, but in long continuous trenches small traverses of one foot thickness were left at short intervals.

One more point and a very essential one as to the position of the trenches was that the heads of the holders were never showing against the sky-line.

It is said of the pits on the Modder above Paardeburg that the throwing of earth backwards and forwards prevented surface water draining into them, and that the rain that fell in soaked away. The soil was stiff sand, chalky, 2 feet below the surface.

As regards the time taken in the making of the trenches, it is difficult to get reliable information; but as the matter that chiefly affects us is the time it would take our men to make them, I will give you shortly the experience of a force practising Boer trenches for experiment at Rawalpindi.

A scheme was made there under the orders of the Colonel on the Staff for the defence of a position, and the work was carried out by the sappers and the 36th Sikhs.

The report received, which the Commandant of the Bengal Sappers and Miners has permitted me to use, shews that the soil was hard clay, and that with the men working 5 feet apart, at trenches 4 feet to 5 feet deep and undercut, it takes five to six hours to complete the trench for trained men, and as much as seven to eight hours for untrained soldiers. This is also borne out by the practice of British infantry in the same garrison.

It was found that if the trenches were made 2 feet 6 inches wide instead of 2 feet and under, the rate was a good deal accelerated, and also the trenches in their incomplete state were available for use by men firing, kneeling, or sitting, which was not the case with trenches, only 2 feet wide.

The undercutting of the trenches is very difficult in hard soil, where picks must be used.

During the past week Boer trenches have been constructed as targets for artillery practice at Pur Camp. The soil is very easy. The trenches were made 10 feet long and 2 feet wide and 4 feet 6 inches deep. Two men made each trench in three hours. All the trenches which were hollowed out beneath fell in at once.

I think it must be obvious from all that has been said that the Boer pit is not applicable at all for the attack. It can hardly be supposed that the long stay of an attacking force, say at 800 yards, would be permitted by a force which could prevent it; and if the defence were not strong enough to prevent this, there seems no object in making such tremendous preparation in the attack.

It is possible of course that an advance under cover of darkness or fog might be made with the intention of holding the enemy to his front, and that time might permit of the preparation of a deep trench; but in that case invisibility cannot for a moment be expected after fire is opened, the distance being so short, and it is questionable whether a parapet would not be of an advantage. Trench-work at very close quarters will be of the nature of sapping.

It is stated by Henderson in his book on the battle of Spicheren that though the German leaders before the war did not dispute the value of entrenchments under certain circumstances, they held them to be out of place in offensive battle as tending to check the élan of the troops. Yet when a post was carried, such as a farm or a village, it was the constant practice of the Prussians to put it at once in a state of defence, and hold it as a rallying point. Probably buildings will not be occupied much in the time to come. There is an obvious difference between entrenchments designed to afford cover for a force defending a position to the last, and the temporary cover required for troops in the attack. The former assume the character of field fortification, and nothing should be omitted in their preparation to give the soldier thorough confidence in his defensive armour; the latter, on the contrary, merely take the place of natural cover, and are but an auxiliary to the attack.

Attack entrenchments the soldier should be accustomed to abandon as naturally as he would the small features of the ground he passes over.

There has on this account always been a marked preference in Germany and Austria for entrenchments of the weakest profile, and I cannot but think that, considering the shortness of the time often available in an attack, we shall be doing wrong if we abandon for the attack the class of hasty entrenchment we have been accustomed to—an attempt to replace them by entrenchments, such as the Boer trenches, which are suited more to the defence.

Of course, if time be no object, and the intention is to strongly contain the front of a position, deeper trenches will naturally be made; and if the soil and position are suitable, and the site is liable to artillery fire, such trenches as the Boer trenches may be very valuable, but I think this must be the exception.

The defence of villages and buildings will, I think, be much less frequent in the battles of the XXth century than in the days gone by. Artillery, which is not very effective against earth entrenchments, has a very great effect on buildings, and even shrapnel from field guns will pierce an ordinary brick wall, though not the walls of stone, and put of which Pathan and Afghan villages are made. The effect of a few high explosive shells would probably be the evacuation of any building, if not the loss of many of the defenders.

The skilful position of the Boer trenches of course demands our admiration, but I do not think that our own officers have proved any less skilful in defence in this particular during the war, and a cursory glance at our own text-books will show that the principles were the same.

The tiers of fire are no new lesson, but are common to all cases where number of men permitted their use, but it must be remembered that the more you lock up men in trenches, the less you have for the counter-stroke—a consideration that did not so much affect the Boers on account of (1) their mobility and (2) their intention to retire when their flank was turned.

The chief points about the Boer trenches are undoubtedly their depth and narrow width. The undercutting, except at Paardeburg, was hardly a military feature at all; no more in fact than the cook-house of a defensible barrack.

As meeting the effect of rifle fire, the width of the trenches has no object whatever.

I would here mention that a curious fact was communicated to me only a few days ago by an officer who had been through the campaign in Canada in 1885 against Riel and the rebellious half-breeds. The country was a succession of bluffs or low hills, covered with scrub; the half-breeds constantly entrenched themselves on the forward crests of the hills with vertically cut trenches, scooped out beneath, ammunition being placed in the hollows. No parapet was ever made, the earth being spread as in the Boer trenches, and the trench itself

was always skilfully placed, so that no heads were ever silhouetted against the sky. There was always a row of bushes or scrub behind and rose scrub in front.

The result was that again and again the expedition came suddenly upon them, not knowing their proximity till fire opened.

The trenches were wider than those of the Boers, but proved equally effective. Rifle fire alone, however, was usually employed against them, and artillery only shelled the woods with little effect, as the half-breeds made off.

It may be assumed, therefore, that the preparation of the trenches of narrow width was made by the Boers solely to avoid the effect of artillery fire. One hundred and twenty guns firing at Cronje's larger at Paardeburg killed only fifty men out of over 4,000. The proportion of Turks killed by the Russian artillery at Plevna was considerably less.

Let us examine for a few minutes the effect of artillery fire.

Time will not permit a wide analysis of the subject, so I must assume that our artillery piece for piece is at least as good as the artillery of any other nation, and for our purposes it will be sufficient to examine the Range-table of the 15-pr. B. L. gun and that of the 6" B. L. howitzer, both guns of our own service and good guns.

With the 15-pr. B. L. gun, I find that at a range of 4,500 yards, under practice conditions, and with the range known, the angle of descent is 1 in 3, and that 50 per cent. of the rounds fall in a space 69 yards long, 2.55 yards broad and burst within a height of 186 yards of the earth.

At 3,500 yards the slope of descent is 1 in 5 and the space $33 \times 2.37 \times 6.45$ yards for the same percentage.

For the 6" B. L. howitzer (with full charge).

At 5,000 yards the slope of descent is 1 in 1 and the space $44 \times 11.8 \times 44$ yards.

At 4,500 yards slope 1 in 1.5 and the space $27 \times 10.5 \times 18$ yards.

" 3,500 " " 1 in 2.3 " " $21 \times 5.87 \times 9.13$ "

The corrections to be made for service conditions and unknown range, I must leave to imagination. The space must be multiplied by 4 to include the whole 100 rounds.

It will be seen at once that, as regards direction, our guns are very accurate; little can be desired in this particular; the range is, however, much more variable; and inasmuch as it is with the breadth of a trench we are dealing, I hope I am not wrong in deducing that whereas 50 per cent. of the rounds from the 15-pr. field gun under practice conditions fall in a bracket of 33 yards when fired at 3,500 yards range, it may be assumed that perhaps one round in a hundred will fall, under practice conditions, accurately into a 2 feet trench.

That is to say, that under practice conditions the danger to a man in a trench from a common shell, such as now used by the German field artillery, is infinitesimal. The danger is multiplied by the length

of the ground covered by the cone of dispersion in the case of shrapnel, such as is used by our field artillery for all purposes.

The vast majority of shells used against a position are those of field artillery and light position artillery.

The contents of these, whether shrapnel bullets or splinters of common shell, all fly forward, and therefore, if a man is sheltered behind a parapet, even a small one, or behind the solid earth in a deep trench, it is no matter whatever to him if the trench is wide or narrow.

Nothing comes back except the splinters of howitzer common shell. As these splinters have no penetration worth mentioning through earth, they produce no effect, unless they fall into the trench.

It comes to this that the decreased width of trenches makes no difference in the matter of rifle fire of modern rifles; it makes hardly any difference at all in the case of field guns; it is more concerned with the action of guns of position.

Now, since the narrowing of the trench even 6 inches makes all the difference in the world in facility of preparation, I think it is idle to make our trenches less than 2 feet 6 inches.

The depth is another thing; where it is possible to obtain depth without sacrificing facility in use of the rifle, I think that depth up to 4 feet 6 inches should always be obtained for defensive trenches; beyond that there seems no object in deepening.

The statement that the Boer trenches were not open to enfilade fire is idle, for every trench can be enfiladed if you get into the right place to enfilade it, as was shewn when the gallant advance of the Canadians and the Royal Engineers at Faardeburg gained a considerable amount of ground along the river west of Cronje's laager, and so enabled our troops to enfilade and render untenable the Boer trenches in that neighbourhood.

I would, with reference to this incident, point out how much the advance was assisted by the sapping, *i.e.*, deep-trench work of the attacking force—an instance which shows what might perhaps have been done in other attacks if the spade had been more freely used.

In making trenches of any form, the question whether the sides are vertical, or if sloping, of what slope? is governed entirely by the nature of the soil. If the soil will stand, certainly vertical trenches are the best, unless required for communications, where the simple fact that a man is wider at the shoulder than he is at the feet makes a slope an advantage.

The best depth for defence is, I think, 4 feet 6 inches, that is to say, the height the average man can fire over, and the best width 2 feet 6 inches.

The hollow below is best left alone, unless for a force on the passive defence.

The position, the invisibility, the shortness of the trenches, or in long trenches the traverse are all of excellent effect.

If there is any other excellence or defect in Boer trenches, we must find it out ourselves by practice.

I regret that I have not time to take up the question of the class of defence to be used in frontier warfare.

The rough hills themselves, as a rule, give ample cover for an advance, and the lesson taught by the Pathan of utilizing every rock and prominence on the hill side, and again of the race down hill from cover to cover, was well learnt by many of our regiments in the campaigns, 1895-97-98.

The lessons of the perimeter camp, with the men ready on the outer line, with a good parapet, and when possible a tripping wire or two under fire are all fresh in the memories of most of our Indian army. The sad lesson of Saraghari has taught the evils that may be the result of leaving the smallest piece of dead ground when designing a defensive post, and to go further back the siege of Chitral tells us of the necessity in such a case to watch for mines and to meet them with counter-mines before they can be loaded and fired beneath the wall of the defence.

Into further detail I do not propose to go, as my time is up.

Gentlemen, I hope that I have made clear one purpose of my lecture that entrenching is a necessity as much in attack as in defence. The question is not a new one. I have tried to show that the need for all troops to be ready and able to entrench at will was really proved years ago. The carrying of a spade is a vexatious thing, but I do not think that any method of carrying it otherwise than on the body will accustom the soldier to look upon his spade as his friend, nor will it ensure the presence of the spade at the right time and place.

As regards the attack, so long as troops can advance without entrenching to such a point as will enable them to bring an over-mastering fire on the defence, so surely will they do so without entrenchments.

For practice, however, it seems idle to attempt it now beyond 800 yards, unless the natural ground assists the advance.

I trust that the views I have expressed may meet with no mercy at your hands, if they are found by experience to be untenable.

Before all things I hold that practice and constant practice under the best conditions obtainable can prove all things and enable us to get at the root of the matter.

I now only have to thank you for giving me such a patient hearing.

CAVALRY AND THE BOER WAR.

A LECTURE DELIVERED AT ALLAHABAD BY LIEUTENANT-COLONEL
J. A. COXHEAD, C.B., ROYAL FIELD ARTILLERY. APRIL 1901.

After some introductory remarks the lecturer proceeded—

As regards the future tactics of Cavalry, the Boer War will probably give us fewer lessons than it will concerning those of Infantry and Artillery, a cogent reason for this being that our opponents had none. Hence our Cavalry, gradually assimilating itself to the existing conditions, assumed to a considerable extent the rôle of Mounted Infantry, and even when acting as Cavalry, pure and simple, the due exercise of its functions was naturally greatly limited by the absence of Cavalry on the opposing side. Hence has arisen the cry that the days of Cavalry are past, and that Mounted Infantry can quite well do its own business and that of Cavalry as well. Our Cavalry has had many hard things, frequently and usually, if not invariably, undeserved, said and written about it during this war, and the hardest have emanated from those irresponsible critics who know little or nothing of the subject on which they dogmatise with such boundless assurance. We all know Dr Conan Doyle as a brilliant writer of fiction, and his book—"The Great Boer War"—is as fascinating and interesting as the majority of his works: probably too it is as accurate as can be expected of a book racing with many competitors to seize the public fancy before satiety has set in, and, what concerns us more, before there had been time to sift the chaff from the wheat, and to accurately gauge the causes and effects of the various phases and episodes of the campaign. But the power of writing sensational literature, however great it be, does not necessarily make a competent critic on the art of war, and Dr. Conan Doyle would have been well advised to have omitted his chapter of deductions, whether he intends it to be taken seriously or not: at all events when he expresses the opinion that the best way to improve our Cavalry is to abolish it altogether, he is writing sheer unadulterated nonsense. The days of Cavalry are not over yet, and, unless the millennium comes in the meantime, will last as long as those of any one in the room now, and probably a great deal longer.

Having flatly contradicted an unqualified statement and followed my contradiction with making an equally unqualified statement myself, I must proceed to justify myself, my contention being that from nothing learnt in the Boer War should we conclude that the days of Cavalry are past, and to do this I will briefly sketch the action of our Cavalry in the several theatres of the campaign. First, as regards that with Sir George White's force. This consisted of

the 5th Lancers, 5th Dragoon Guards, 18th and 19th Hussars: four fine regiments you will say, but what did they do? There was such a short time between the declaration of war on the 12th October, and our being shut in at Ladysmith on the 30th, that this Cavalry had but small chance of justifying its existence, added to which the country, a succession of stony kopjes, was very disadvantageous for its employment. During that time the 18th Hussars took a severe knock at Dundee, but when we won our little fight at Elands Laagte, our success would have been less complete had we not had our Cavalry to charge the enemy whilst retreating, though even then, through the misplaced clemency of our gallant troopers, the loss suffered by the Boers was not as great as it might have been. Again, when our centre was retiring at the battle of Lombard's Kop, or Farquhar's Farm, the Boers had a splendid chance for a charge had they had Cavalry, which, fortunately for us, was not the case. Our centre was retiring: it had been badly hammered: was tired, for mind you we had been out all night, my own people having left their camp about 11 P.M. and the Infantry theirs about the same time: fighting had begun at daybreak, and it was now noon, so there had not been much chance of sleep: thirsty and hungry, for the sun was hot, and water-bottles and haversacks had doubtless been emptied in the small hours of the morning: was being harassed by shell of various natures from all sorts of guns, Long Loms, field guns, machine guns, and those yelping curs, pompoms, as well as by rifle fire; and a couple of batteries which had hurled themselves to the front to its support were unable to do more than prevent the enemy advancing: it was a typical opportunity for a Cavalry charge had the enemy had some handy, for, though theoretically speaking, an Infantry man, armed with a magazine rifle, should be a match for any number of Cavalry men, we had found at Elands Laagte that in actual conflict this is not the case, but that once Infantry are on the go, Cavalry can act with decisive effect. I have introduced this episode, because from a negative point of view it shows the value of Cavalry, but, except to actual spectators, the situation is possibly not easy to grasp.

I mentioned just now sleep, water-bottles, and haversacks, and have a few words to say about these. It is quite certain that in future wars a great deal of work will be done at night time: the ordinary hours of rest will consequently be much interfered with, and it will be essential that sleep shall be compelled to come at will whenever a chance affords. The power of sleeping at any time in any position will therefore be valuable in war, for want of sleep destroys morale faster than anything else, and should therefore be cultivated: fortunately to the majority of us it comes pretty naturally, and the pavement of the high street of Ladysmith, I remember, was not too hard on one occasion to prevent my getting sound sleep.

As regards the emptying of haversacks and water-bottles, the British soldier is curiously careless: headless of the long day before him he uses up his stock of provisions as soon as he possibly

can and suffers for it afterwards when the sun has become hot and he has been on his legs for many hours. I speak feelingly on this subject, because on various occasions I was accompanied by my trumpeter, a capital boy, and always all there, and the possessor of a very healthy thirst and appetite. About midday perhaps I would manage to get a rest and proceed to enjoy a light and frugal repast, when I would invariably discover that the trumpeter, having exhausted his stock in the small hours of the morning, was now in a state of semi-starvation, and I had of course to share my not too abundant meal with him. This is a point of some real importance, especially as regards the water, and should not be lost sight of.

I mentioned too "the misplaced clemency of our gallant troopers" at Elands Laagte, and I do not think it out of place to say a few words about this. Good strategy puts an army into the best position possible for the execution of its tactics, the outcome of which is to be the capture or the killing of your enemy: if mercy is obviously feasible, capture: if not, kill: there must not be any chance of the enemy getting away. So called humanitarian views are prevalent enough to cause a large section of people to talk and write as if it were possible to make war a pleasant pastime. All thanks and honour to the good people who have done so much to alleviate the sufferings, and add to the comfort, of our gallant soldiers, and may our sick and wounded be even better tended in future wars than they were and are being in this, though never has so much been done to help us soldiers before: but humanitarianism in war can be stretched too far, and thereby more misery be entailed in the end than when war was conducted on truly barbarous lines. War is a silly thing, and it seems strange that in these enlightened days we cannot settle our differences without trying to kill one another, but so it is and so it will be for long to come, and, as soldiers, once we are engaged in war, we have one paramount duty, and that is to kill: all other duties—towards the enemy at all events—are subsidiary. Now in that charge of ours at Elands Laagte as our Lancers swept through the retreating Boers, these in numerous cases threw down their rifles, went down on their knees, and implored our men to spare them: these could not stop to take prisoners: it was a choice between thrusting or letting go. If the Boers had been in uniform, possibly hearts would have been hardened, and the thrust given: as it was the spectacle of these suppliants in rustic garb was too piteous and the let go took the place of the thrust. Rifles of course were quickly picked up: the Boers got away in the dusk: probably fired another shot or two at their too squeamish opponents, and at all events lived to fight another day.

Another similar case is reported to have occurred at Talana Hill, the Artillery missing a splendid chance of firing into the Boers *en masse* through some foolish cry being raised of a white or red flag being an evidence, or an armistice *en l'air* or something silly of that sort; at all events the Boers got away without damage. If we had fought these two first engagements with the proper feeling on all sides that we were there to take and not save the lives of our enemies, the effect

might have been salutary. The *ultra* humane way in which we have carried on this war all through has prolonged it, has caused great loss on both sides, and is not business : once you start war you have to kill, and the more you kill at the beginning the smaller will be the butcher's bill at the end.

After the investment of Ladysmith was completed our cavalry *per se*, though very useful in other ways, had but little chance of distinguishing itself : it made various sorties, sometimes with and sometimes without the support of Artillery, and with results about which it is hardly worth while to enter into details.

Concerning the Cavalry with Sir Redvers Buller's force, I have little to say : he had very little of it, and it had to operate in a very difficult country. We thought that it missed a great chance the day after it came into Ladysmith in failing to go out and capture the Boer's impedimenta, miles of wagons, etc., slowly streaming away ; but this is a contentious matter that I will not allude to further except to say that, if the chance was missed, this does not go to prove that Cavalry *per se* is useless, but only that you must know how to use it when you have it and when a chance is afforded you. The beleaguered force, exasperated at seeing all these good things disappearing into the dim far distance, and longing to taste the sweets of freedom once more, made an attempt to go in pursuit. Composite squadrons were made up in the Cavalry, and two composite batteries out of the six that we had. The horses were simply living, or dying, skeletons, and, when I tell you that two of mine dropped dead in their harness before a start was made from the gun park, you will easily understand that our force did not succeed in doing much.

We will now leave Natal and go over to our forces in the Free State and Transvaal where in fine open country eminently suited for Cavalry operations we reasonably expected great results from that arm, and, I must confess, have suffered much disappointment. The good work done, however, in that part of the theatre of operations has not yet been fully recognised, though the relief of Kimberley already stands forth as an achievement, the brilliancy of which it is difficult to exaggerate ; but, on the other hand, the constant failures to catch the enemy, when seemingly within our grasp through the inability of our English and Waler horses to gallop down the Boer country-breds and Basuto ponies, gave much apparent reason for cavil. Does this prove that the days of Cavalry are past ? Not at all. There were four excellent reasons for whatever breakdowns occurred : any one of these four was sufficient to seriously handicap the Cavalry : in combination they created difficulties almost insurmountable : they were—

1. The length of the sea voyage. From England to Capetown this is, I think, about 6,000 miles : from Bombay to Durban a fortnight's journey. Some ships were big and some small, some had good passages and some bad, but under the most favourable circumstances, and however judicious was the management of the horses on boardship it was absolutely impossible that they could be landed in a state fit for immediate work.

2. Being sent straight to the seat of war, and the super-equine efforts at once required. After the long sea voyage the horses naturally required rest, but instead of getting it were at once entrained and sent straight to the front. On the Natal side this railway journey was effected under conditions resulting in the deaths of many and disablement of more horses : on the Cape side it was probably no better, and the distances were longer : the horses consequently arrived in a terrible state of exhaustion and complete unfitness, and yet the exigencies of the case demanded that they should at once be put into work, and called upon for an exhibition of endurance such as horses have never been asked to show before, and, I trust, English ones, at all events, will never be asked to show again.

3. The insufficiency of rations. At all events, if horses in this enfeebled state have to be required to attempt such deeds, it was obviously necessary that they should be highly fed : an English hunter in perfect condition gets about 14 lbs. of oats a day, and as much hay as he can eat, and works three days a fortnight : how much then would these horses at the Cape in bad condition and working hard every day want ? I do not know, but what they did get was 8 lbs. a day,—sometimes,—and hay very doubtful.

4. The weight carried. I think if I put it at 20 stone, I am not far wrong, and I do not think I need say any more.

I think you will agree with me that those four reasons are quite sufficient to account for any shortcomings in our Cavalry : I said before that if you have Cavalry, you must know when and how to use it : I say now that if you have horses, you must remember that they are not automobiles, and that in them you have not yet discovered the secret of perpetual motion. Deductions from the Boer War must be accepted with great caution, for its conditions were absolutely unique, and it is most improbable we shall ever have such another. Abolish our Cavalry and then in the next war in which we are engaged when there will almost certainly be Cavalry opposed to us, we shall find ourselves hastily improvising Cavalry, as we did Mounted Infantry for this one. By all means let us have as much Mounted Infantry as possible, but do not try to make it think it can fill the rôle of Cavalry : if this is done, it will soon cease to be Mounted Infantry. This is no new thing: what was the Dragoon originally ? a Mounted Infantryman, and then afterwards merged into the Cavalry : let us beware that history does not repeat itself : there will be plenty of room and work in the future both for Cavalry and Mounted Infantry.

Speaking of Mounted Infantry puts me in mind of a minor point which still is, I think, perhaps worth mentioning, and that is, wearing of spurs. My opinion is that all our mounted services would be better without spurs ; for only a few horses are they required, and only comparatively few men know how to use them : in the majority of cases they occasion an undue expenditure of girths, and the marking of horses in curious parts of their bodies. At all events Mounted Infantry should not wear them, for to them they must be an encumbrance, and to my own knowledge were so on the stony kopjes of Natal. A very important duty of Cavalry is reconnoitring : efficient reconnais-

sance has invariably been a great difficulty with all armies at all times, and it will not become easier in the future, for the increased range of rifle fire keeps the reconnoitrer at a distance, whilst smokeless powder renders it next to impossible for him to discover the position or numbers of his enemy. To become an efficient scout, a man must be naturally gifted, and he must be thoroughly individualised: individualisation is the great necessity for the Infantry and Cavalry soldier of the future. This is where the Boer has had the advantage over us: roughly speaking, all Boers are highly individualised, for they have been accustomed to stalk game from their youth, and stalking game is the very best training a man can have as regards his individualisation, and for making him competent for the still higher sport—if such a term may be used—of stalking men. The Boer has failed in absence of discipline: we must combine the two. In Indian service we have a great pull as compared with British, for here men can become game shots, whilst in England they have not the opportunity. It is of the highest importance that every encouragement and facility should be given to men to shoot. A disciplined army of sportsmen would be irresistible.

On the other hand, we must not think that all future wars will be conducted in such a hide and seek manner as this one, or that Boer and Red Indian methods will always be in vogue. The big manoeuvres this year on the continent have not been carried out in this way at all, and we may be sure that we British soldiers will still be called upon at times to fight, as we have been accustomed to fight in days past, and if we are so called on, there will be no chance of our not knowing how. Great is the value of adaptation: hard and fast rules are to be deprecated. One lesson, Cavalry in common with all other mounted branches should take to heart from the experience of this war, is that we have much room for improvement in the care and management of our horses and other animals. Major Weller in his valuable lecture the other day gave us some absolutely appalling instances of the astounding ignorance of persons in charge of transport animals in the Tirah campaign: the waste of horse flesh in the present campaign has been enormous, and it is to be feared that a great deal of it was due to stupidity and carelessness—faults which might be rectified.

To sum up then I am of opinion: that until other civilised nations give up Cavalry, it would be madness for us to do so; and if other nations did, I should like England to remain unique in that respect: that Cavalry will still have ample work in screening, reconnoitring, etc., etc.: that there will be fewer opportunities for shock tactics, but that they will still occur, and that more attention will be paid to rifle fire.

SCHEME FOR EXPENDING THE 200 ROUNDS OF BALL AMMUNITION ALLOWED EACH SOLDIER OF BRITISH INFANTRY ANNUALLY.

BY SERGEANT-MAJOR F. CORNER, 1ST BATTALION, BEDFORDSHIRE REGIMENT.

TABLE B.
PART I.—INDIVIDUAL DELIBERATE.

No. of practice.	Distance.	No. of rounds.	Description of fire.	Target.	Position.	REMARKS.
	Yds.					
1	200	5	} Deliberate Individual.	Head, 11 inches by 8 inches.	3 lying, 2 kneeling	Fixed sight and bayonet.
2	300	5		Ditto	3 standing, 2 kneeling.	Fixed sight.
3	500	5		Ditto	Lying ...	Sight for distance.
4	500	5		Head and shoulder	3 lying 2 kneeling	Ditto.
5	600	5		Figure of man ...	Lying ...	Ditto.
PART II.—INDIVIDUAL DELIBERATE.						
6	500	5	} Deliberate Individual.	3rd class ...	Kneeling.	
7	600	5		3rd " ...	Lying.	
8	800	5		2nd " ...	" ...	2 sighting shots.
9	900	5		1st " ...	" ...	Ditto.
10	1,000	5		1st " ...	" ...	Ditto.
11	1,300	5		1st " ...	" ...	Ditto.
12	1,300	5		Target, 8 feet by 10 feet.	" ...	Ditto.
13	1,400	5		Ditto	" ...	Ditto.
14	1,500	5	Ditto	" ...	Ditto.	
PART III.—COMPANY FIELD PRACTICES.						
15	600	7	Mag. Ind.	Special ...	Single rank, lying	Moving target practice.
16	About 800	5	Delib. Volleys.	" ...	Ditto	Company defence practice.
17	" 1,000 to 500	12	As ordered	" ...	Any ...	Company surprise practice.
18	" 1,000	5	Mag. Ind.	" ...	Single rank, lying	Company rapid fire practice.
19	" 1,200 to 600	12	As ordered	" ...	Any ...	Company strong patrol practice.
PART IV.—SPECIAL PRACTICES.						
		15	Set aside for Company	Field Firing.		
		15	" " " Regimental	Field Firing.		
		25	" " " Disposal of Commanding Officer.			
		20	" " " " of Company Officer.			

NO. OF ROUNDS.

Part I	...	...	...	25
" II	...	...	...	45
" III	...	...	...	14 S. shots.
" IV	...	...	...	41
				75
Total	...	...	...	200 rds.

In the notes below I will endeavour to give my reasons for the advantages which, I think, would ensue if the annual course was carried out on the lines shewn in the accompanying Table B, taking each part as it comes.

Part I.

It may, I think, be taken for granted that the object the soldier of the future, will fire at on service in the attack, will rarely present a larger target than the size of a man's head, or head and shoulders.

I do not refer to such objects as guns, horses, or bodies of men coming suddenly into view (for which provision is made in Parts III and IV), but the ordinary target that would be presented by an enemy in defence of a position.

For this reason I venture to say that the present target, at distances within 800 yards, is too large, and the soldier has very little practice at firing at a target of a size he would fire at in the field. At field practices and field firing, of course, he fires at small targets; but as the fire is not deliberate individual, and no one knows whether a man fires wild or not, many men undoubtedly do fire wild and take little or no aim; in fact, many think more about pressing the trigger on the command "Fire" (so that the volley goes off correctly) than of taking a correct aim.

By the practices shown in Part I, I beg to suggest that the target, being about the size of a man's head, would be about the size of the object he would fire at in the field, and the practices would therefore give him training in firing at such objects, and the fact of its being "Deliberate Individual" would give him time to aim and teach him what his errors were in his previous shot, as, if he missed, he would undoubtedly see where his shot went, and could aim higher, or lower, next shot as may be necessary. I have shewn bayonets fixed at 200 yards, because, at that distance, the charge would be imminent, or a sudden rush could be made by the enemy. I have only allowed three rounds standing in Part I, because I think that in war soldiers will now very seldom stand up to fire at an enemy, unless that had cover for the whole of their body, such as a wall loop-holed, etc., in which case it follows they would generally be able to rest their rifle on that cover, or loop-hole to enable them to take a steady aim.

I have only allowed six rounds kneeling, because, in actual warfare, men would seldom kneel to fire if they could see the enemy lying, because when lying they are much steadier and, in addition, do not present so large an object to the enemy; and for that reason I have allowed 16 rounds lying in Part I. I am aware that lying at 200 and 300 yards is a departure from the orthodox course, but the target for Part I is so much smaller that a man would want a steadier position than standing, and besides which I venture to infer that, in actual warfare, the lying position would be more generally adopted

than any other, especially at the close ranges. The advantages the target proposed in Part I has over the present target are, I suggest, these—

- A.—The size of the *present* target admits of the firer letting his aim wander at least 6 or 8 inches off the point aimed at, *viz*, the “Bull’s-eye”, and he would still get a hit on the target. In actual war this would be a “miss”: the target suggested by me in Part I would necessarily teach the soldiers to obtain a steady aim, as, being small, it would not allow his aim to wander off, as it would result in a miss.
- B.—The soldier knows that at present, so long as his aim is somewhere near the Bull’s-eye, he is nearly certain to get a hit somewhere on the target, and consequently is often not sufficiently careful about it.
- C.—It gives the soldier practice in deliberate fire at the sort of target he would fire at in the field.
- D.—It teaches him what part of the object to aim at during the time he is within 500 yards and has the fixed sight and bayonet.

I have taken the fixed sight at 200 and 300 yards, because, the trajectory being low, it is not necessary to alter the sight, providing the aim is kept low. On service a soldier would often not shift his slide after once putting it at “Fixed sight,” or if he did, would probably not shift it correctly; and Part I would teach him the necessity of aiming at the bottom of the object he wished to hit, and *not* to fire at the top of the object, which many do and consequently go high.

I have not allowed any firing at 200 and 300 yards with sights for distance, because I think that if a man can fire fairly well at 600 yards and beyond with the sight for distance, he would most certainly be able to do so at 200 or 300 yards.

Part II.

At the present time the British soldier is in possession of a long range rifle, and beyond 800 yards he has little or no practice at firing at long range, excepting field firing, when, firing as he does in a section, he rarely takes the calm and deliberate aim that he would do were he firing at a target for classification, as he knows that no one is aware whether he individually hits the target or targets, or not, and that his individual performances cannot be checked.

For this reason I venture to suggest that the practices laid down in Part II would—

- (a) accustom the soldier to the sighting of his rifle at long range;
- (b) teach him how to aim at objects a considerable distance off by shewing him the appearance of the object at the longer ranges;

- (c) give him interest in firing at long ranges, as on this would result his classification for the ensuing year ;
- (d) teach the soldier what effect (generally) the wind has on the bullet at the longer ranges ;
- (e) give the soldier confidence in the field when firing at long ranges, because he would know that he had had practice previously in individual firing at long range, and had been able to hit the target perhaps even at 1,500 yards. He would also know the sighting of his rifle and what roughly to allow for wind.

I have suggested the 3rd class target for 500 and 600 yards, because an enemy in position would rarely present a larger target to aim at, and often not as large ; but I have given the 1st class target at 900, 1,000 and 1,200 yards, and a new target, size 8 feet by 10 feet, at 1,300, 1,400 and 1,500 yards, because, for one thing, a man requires something large to aim at, as he has had very little practice at long range individual firing, and for another thing in actual warfare a soldier would not fire at a very small object at long range, because he could not see it unless he was provided with field glasses. I have laid down two sighting shots at each practice from Nos. 8 to 14, inclusive. This should give each man a very good idea as to what elevation he actually required at each distance.

Of course, although I have previously referred to the occasional wild fire at field firing, I do not mean to say that every soldier does not try to fire at long range, because many men undoubtedly try and make good practice, but I think that by far the greater part of hits at sectional practices are made at the shorter ranges, because a soldier, having had no individual practice at long range, knows little or nothing about aiming at anything over 800 yards with the rifle he is now armed with. I do not imagine that the first year or so very good results would be arrived at in the individual practices in Parts I and II, but I think that in the second year or so there would be a decided improvement in the shooting. Of course the shooting of the British army is good now, but the targets they fire at on the range are very much larger and clearer than would be obtained on service, and I respectfully beg to submit that it would be better if a soldier were not taught to aim at a large object in peace times ; when in actual war he would generally get a target very much smaller. In the *Musketry Regulations, 1898, section 153 (d)*, it says that the limit of employment of rifle fire must depend on "*The skill of the firer.*" I beg to infer that the skill of each firer would be materially increased by individual practices at long range with a fair target and at short range with a small target.

Part III.

The present Part II (which defines the sectional practices) as laid down in *Musketry Regulations, 1898*, appear to me to be too much suited to the days of short range rifles and black-powder, as most of the practices are at 300, 500 and 600 yards, with a much larger target than one

would expect under ordinary circumstances in the field. I imagine that the fire of the future will be more of independent (controlled) at close quarters, as the men of each section naturally must become more or less scattered (during the advance of an attacking line in force) and when men are scattered "independent" is a better fire than volleys, as so many commands are not necessary, and, in many cases, a much better aim is taken. Some of the practices in my suggested Part III *could* be performed on the ordinary range, and the remainder on the field firing ground, but I myself think *all* Part III ought to be performed off the range under service conditions as nearly as possible (*i.e.*), the exact distance should not be first measured (*e.g.*), in practice 16, I say "about 800", but I mean that the company should be halted about 800 yards (not nearer) from the targets. The distance taken by range-finders and fire opened at once. This procedure to be adopted in all practices in Part IH (except 15 which is too close a range for range-finders to work), for on service one would never, or very seldom, fire at an absolutely known distance, but please see later my methods of conducting each practice. On service all distances would have to be either taken by range-finders or ascertained by watching the effect of other units fire and taking up the range from them.

In no practice in Part III should a unit less than one company of four sections be exercised at once. The practice of exercising one or two sections at a time probably gives better results, but it gets men into the habit of being unable to fire steadily unless their section *alone* is firing. There are only 41 rounds allotted by me for Part III, but I look on Part I (25 rounds) as being equally as useful as sectional practices in training soldiers for work in the field. Parts I and III added together make a total of 66 rounds, which is only 11 rounds short of the number of rounds at present expended in Part, II Table B, *via.*, 77 rounds.

Part IV.

There is little to be said about Part IV, which distributes the remainder of the 200 rounds. The 15 rounds per man for regimental field firing would be utilised as usual, as also would the 15 rounds per man for company field firing. 25 rounds are placed at the disposal of the Commanding Officer, which would admit of 5 practices of 5 rounds each, or in any other manner he may desire to expend them in. It is 16 rounds less than the Commanding Officer has at present, but I think it is compensated for by the extra practices the soldier gets at long ranges. The Captain of the Company is given 20 rounds per man to be expended as he thinks fit. He gets 40 under the present rule, but he has to provide sighting shots for his company for all the individual practices out of it. In my Part II I provide each man with two sighting shots from practices 8 to 14, inclusive, which equals 14 rounds, and this added to the 20 for use of the Captain makes 34 rounds, or only 6 less than his present number. This loss is, I think, compensated for by the extra practices the soldier gets in Parts I and II.

I am aware that I have only allowed 5 rounds per man for each practice in Parts I and II. My reason for doing so is this—

The majority of men once they hit a target, or as we say "get on the target" can generally keep on it and make a fair score. Therefore after they have fired 5 rounds at the object they know quite as well where to aim, as if they fired 7 rounds at each object, and for another thing the soldier, with the present rifle and conditions of war, requires such diversified instruction that, unless the number of rounds is cut down for each practice, some portion of his training would have to be unpractised.

I trust I have made myself clear as to my reasons for suggesting the course and will now proceed to give my methods for conducting each practice or part.

METHOD OF CONDUCTING PRACTICES.

Part I.

For the *first, second and third* practices in Part I the target will be a black disc, "11 inches by 8 inches," mounted on a trolley (see *fig 1*) representing the head of an enemy in position. As one man fires, the target will be drawn in and another one pushed out for the next man to fire at, and so on, each man firing alternately. Thus two men will fire at a time, each having his own target, so that, if the range admits of 8 targets been used at a time, *i.e.*, 4 in position to be fired at and 4 behind the mantlets, 8 men could fire at a time, and still each has his own target. Spotting discs not to be used and hits patched up immediately after each check, which should take place when the officer superintending the practice thinks necessary; but certainly after each section has fired, if not before, or on any occasion when it is difficult to distinguish fresh hits owing to so many being on the target.

A hit will be signalled by turning on the outer disc, and each hit will count 1. Ricochets will count, and be signalled, as a hit. Misses will be signalled by the miss flag being shown.

Each fresh hit on the target will be marked off with a pencil to prevent its being signalled twice.

Sights will be at 500 yards in all three practices and bayonets will be fixed in the 1st practice only.

The *4th practice* will be carried out under exactly the same conditions as the first three practices, except that the target will be of the dimensions and shape laid down in Musketry Regulations, 1898, section 200. It is not to be painted on a white back-ground, but the target itself is to be the shape referred to, *viz.*, "Head and shoulders." The whole is to be painted khaki and fixed to each trolley (see *fig 2*). This practice and the 5th practice are intended to represent some of the enemy who have not quite such good cover as the remainder, and who consequently expose more of their body; or it represents a man standing in a fairly deep trench giving orders or using a field glass. Many men on service refuse to avail themselves of cover, even when it is

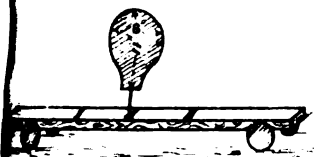


Fig. 1.

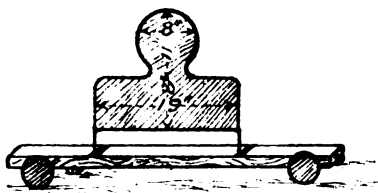


Fig. 2.



Fig. 3.

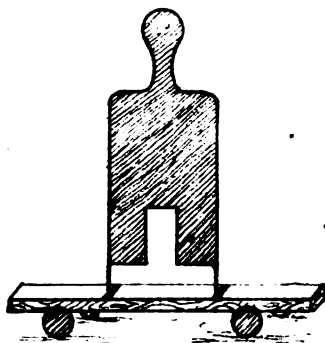


Fig. 4.

50 Firing Point.



Look out shelters.

500

1000

1500

Fig. 5.

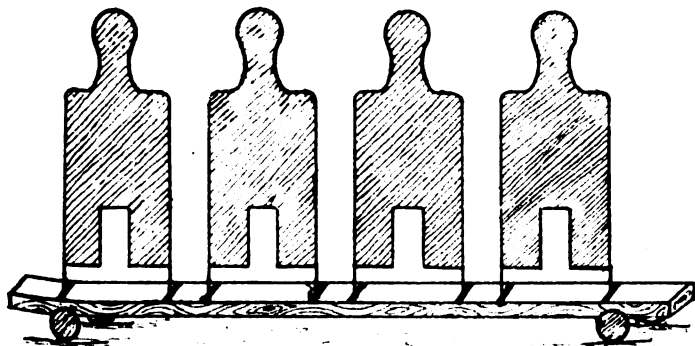
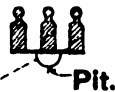


Fig. 6.



Plt.



Central Pit.



Fig. 7.

Fig. 8.



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available, and these consequently present a much larger target than the others. Sights for distance.

The 5th practice will be carried out under similar conditions to the others in Part I, except that the spotting disc will be used to show the position of each hit.

The target will be figure of man (see *fig 3*) mounted on a trolly, (see *fig 4*) and is *not* to be painted on a white back-ground, but the target itself is to be the shape and size shown in the margin. Painted khaki. Sights for distance.

NOTES.

In all the practices in Part I firing is to be from cover, *i.e.*, from behind a small earth bank, or any other good cover, on or in line with, the firing point : these banks to be erected (if no natural cover exists) with shovels by the company firing and should be sufficiently high, and thick, to give cover to a man lying down. If it is not natural cover, it will be demolished, by the company firing, after the practice is finished.

Slings allowed in all practices, but no other rests (in Part I), except that the elbow may rest against any natural support, these may be near the firer, such as a stone or a portion of the earth, or bank, forming the cover. The rifle itself is to rest on nothing but the hand.

The reason men should fire from cover is to accustom them to keep themselves as little exposed as possible. Only a very small portion of their head, and the barrel of their rifle, should show over the cover. On service men would not have their head and shoulders shewing above any cover they had, when they were firing at an enemy or being fired at, so they should not be permitted to do it in peace times.

Part I will not be counted for classification of men, but will be worked out for musketry return showing average hits in accordance with Musketry Regulations, 1898, section 19. It will be shown separate from Part II. It will count for the company figure of merit.

Part II.

Part II will be the only part that will count for the musketry classification of each soldier for the year. It is difficult to lay down any number of points to be obtained to qualify men for marksmen, etc., without the course being first fired by fair shots, but as a preliminary I would suggest—

Marksman	...	70 and over.
1st class shots	...	60 and under 70.
2nd " "	...	40 " " 60.
3rd " "	...	under 40.

There are two sighting shots at each of the practices from 800 yards to 1,500 yards, inclusive. I do not think sighting shots are necessary at 500 or 600 yards, lying down. If a man gets on with his first sighting shot, he need not fire his second, but it could be added to his sighting shots for the next practice (*i.e.*), if at 800 yards a man got on the target with his first sighting shot and did not want to fire the other, he would be allowed three sighting shots (should he require them) at 900 yards, and so on.

The targets for the *6th and 7th practices* are the ordinary 3rd class target with black Bull's-eye painted on, and an invisible inner ring.

The target for the *8th practice* is the ordinary 2nd class target.

The target for the *9th, 10th and 11th practices* is the ordinary 1st class target.

The target for the *12th, 13th and 14th practices* is a special target size 8 feet by 10 feet, having a 4 feet Bull's-eye, 6 feet inner, and outer remainder of target.

Signalling and marking in all practices as at present, Bull's-eye to count 4, inner 3, outer 2. Two spotting discs to be used in all practices. Natural rests, *i.e.*, the kind of rest that would generally be obtainable on service, such as stones, trees, top of a trench or bank are allowed in practices 9, 10, 11, 12, 13 and 14.

Where natural cover does not exist, a small earth bank (high and thick enough to give cover to a man lying down) is to be made on, or in line with, each firing point, so that soldiers may get accustomed to firing from cover, as in Part I. It is to be made by the company firing and demolished on completion of each practice. Any natural cover would, of course, be left standing.

The necessity of keeping well down behind cover, when firing, is to be most rigidly enforced by all ranks.

Glasses should be on the firing point for use, either telescopic or field; two or three purchased regimentally would answer for each company.

On ranges that are only marked for 1,000 yards, raised platforms for firing points could be built by fatigue parties at 900, 1,000, 1,200, 1,300, 1,400 and 1,500 yards of sufficient height to enable the men firing to see the target. The precautions for safety would, I think, be ensured if additional look-out men were stationed on the flanks to prevent any one crossing the line of fire whilst firing was going on. The trajectory is high at the longer ranges; but, as most ranges have, I believe, 2,000 yards clear behind the stop butts, I think it would be safe, even if the bullet went over the butts, which is not likely to happen very often. To ensure safety against this also, however, men could be posted under cover to the right and left rear of the butts to prevent people crossing behind the butts (when firing is going on) within 1,500 yards. They could be posted, as shown in *fig 5*.

Part III.

15th practice. Moving target.—The object of the practice is to train troops to open fire rapidly on parties of men, or objects, who are rushing from one cover to another and are consequently only on view for a very short time.

One target of shape and dimensions as shewn by *fig 6*, painted khaki (the size of each figure will be exactly the same as that laid down for the 5th practice), and one ordinary horse target with rider. Horse and rider painted black on a white target, 8 feet square.

Fire will be magazine independent by companies. Magazine will be charged with 7 rounds on the company parade ground, and the company will proceed to the place where the firing is to take place. When about 1,400 yards (or more if possible) from the target the Captain will extend his company to two paces between men and four paces between sections at the double. When extended the company will approach the targets in this formation in quick time, and when at the firing point, which will be at 600 yards from the target, the Captain will give the commands "Company—Halt."

"Magazine independent by $\frac{1}{2}$ company at the moving targets, 600." Right $\frac{1}{2}$ company to fire at the right target; left $\frac{1}{2}$ company to fire at the left target (or *vice versa* as he thinks proper), $\frac{1}{2}$ company commanders will at once give the executive commands.

The practice will be carried out in single rank, lying.

When about 800 yards from the firing point the Captain will order the bugler to sound the "Commence fire" (on which the moving targets will commence to move across the butts), so that the company can open fire on them at once (one $\frac{1}{2}$ company at the figure of men, and one $\frac{1}{2}$ company at the horse) on arrival at 600 yards, and after the necessary commands have been given.

The whole company is to fire this practice together and the percentage will be taken by $\frac{1}{2}$ companies. After the command "Commence" is once given, men will fire at the object each time it appears, or whenever they may have an opportunity. They should be cautioned not to fire wild, and the whistle should be used to steady the fire occasionally. The targets should not move always at the same rate, but sometimes slow and sometimes quick.

Men may make use of any natural rests there may be near them and are to use any natural cover there may be.

The practice, if possible, should be carried out off the range, but it is not compulsory.

Hits on the horse target will only count that are actually on the horse and rider, and the figure of men target is to be four men figures (separate) mounted on a trolley, as shown in the diagram.

16th practice. Company defence practice.—The object of the practice is to train troops in the description of fire that would

generally be used by them, when they were in a position, and firing at an advancing enemy at medium or long range. The targets will be 20 head and shoulder targets per company, painted, 10 khaki and 10 black, placed colours alternate, at four paces apart. Size and shape of targets will be in accordance with Musketry Regulations, 1898, section 200.

Fire will be section deliberate volleys in single rank, lying.

Any natural rests may be used, and the men are to take advantage of all existing cover.

Ammunition will be issued on the company parade ground, and the company will march to the ground where the firing is to take place, and when at about 1,500 yards (or more, if possible) from the targets the Captain will extend his company at the double two paces between men and four paces between sections, and when at about 1,100 will send his range-finders (who must belong to the company firing) to the front to take the range. The range-finders will erect a flag at a spot *about* 800 yards from the target, and this will be the firing point. It is not to be nearer than 800 or further than 870 yards. During this time the company is still advancing, and when the flag at the firing point is erected, the Captain will order the bugler to sound the "Commence fire" and the range-finders will rejoin their company.

On arrival at the firing point the Captain will give the command "Company.—Halt. Volleys at the targets, 800" (or whatever distance it may be). $\frac{1}{2}$ company commanders will repeat if necessary, and section commanders will at once give the executive commands.

The whole company of four sections (or more if there are casualties) which may, if necessary, be divided into sub-sections, is to be exercised at once, and section commanders are to give the commands "Fire," etc., irrespective of what commands are being given on their right or left, *i.e.*, they are not to wait for each other to fire before they come to the "present." The whistle should be used to steady the fire and correct the elevation, if necessary.

Each section may fire on any of the 20 targets; the percentage will be taken as a company.

The practice should be carried out off the range, but it is not compulsory.

17th practice. Company surprise practice.—The object of the practice is to accustom men in the description of fire and aim, they would generally use when attempting to drive a small party of the enemy backward, who, as they retreated, kept gathering in small groups and opening fire. A patrol of the enemy, in small force, may be supposed to have been endeavouring to reconnoitre our lines and posts, and a company is sent to drive them away. The practice is also a training for officers and section commanders in quickly discerning an enemy appearing in different places for a short time only.

Targets.—Five groups of surprise targets consisting of three head and shoulders of men to a group (see *fig 7*), size of each figure exactly the same as that laid down in Musketry Regulations, 1898, section 200. Painted khaki and black by alternate groups and placed in different parts of the range.

Ten head and shoulder targets, size and shape as laid down in Musketry Regulations, 1898, section 200. These will be placed across the front of the butts four paces between each. Two moving men targets, size and shape as laid down in practice 15. These will be behind the mantlets out of sight.

Fire.—Up to 500 yards will be “deliberate volleys” or “independent” either company, $\frac{1}{2}$ company or sectional as ordered by the Captain. At 500 yards (and not till then) magazine volley or independent will be ordered at the moving target in the butts.

Position any. All cover is to be most carefully taken advantage of, and any natural rests near the firer may be used.

Sights for distance the whole way.

Ammunition will be issued on the company parade ground, and magazines will be charged with four rounds, leaving eight in the pouches.

The company will be marched on to the ground where the firing is to take place (preceded by scouts), who will halt and lie down as soon as they discover the enemy (*i.e.*, the head and shoulder stationary targets at the butts), sending back word at once to the Captain. They should not go nearer to the butts than about 1,200 yards. When the company is about 1,400 or 1,500 yards from the butts, the Captain will extend his company at the double to three paces between men and four between sections, and when at about 1,200 yards or so will send his range-finders (who must belong to the company firing) out to the front to take the range, and they will erect a flag at which the firing is to commence. This flag is not to be nearer than 1,000 yards or further than 1,080 from the butts. After erecting the flag the range-finders will rejoin their company. The scouts will join the company as it comes up to them.

At about 1,100 yards the Captain will order the bugler to sound the “Commence fire” (on which the surprise targets will commence to work, one group rising at a time), and on arrival at the firing point will order his company to halt, and give orders for whatever description of fire he wishes at either the stationary head and shoulder targets at the butts, or the surprise targets on the range.

After firing, the company will advance in double time, taking advantage of all cover; open ground to be crossed in loose order at the double. The eight rounds in the pouch are to be expended in the advance up to 500 yards. Only one round is to be fired at each halt. Not more than three rounds per man should be fired at the stationary targets, the remaining five at the surprise targets as they appear. It is to be distinctly understood that the eight rounds are to be expended in the advance; they are not to be saved up until the company reaches the shorter ranges.

On arrival at about 500 the Captain will order the bugler to sound the "G" and the two moving targets (referred to above) will commence to move across the butts and the surprise targets will cease working. The Captain will at once open magazine fire (either "Volleys or Independent") on them and will not fire at the stationary head and shoulders, or the surprise targets any more. When the four rounds in the magazine are expended the "Cease fire" will be sounded, and the targets examined, the company being marched up to see them.

Range-finders are to be used up to 800 yards, but not nearer (as it is impracticable). After that the distance must be judged by the advances made each time and the effect of the fire. The range-finders would only be able to take range on the stationary targets; there would not be sufficient time for them to take the surprise targets.

The small surprise targets are intended to represent a general retreat of the enemy's patrol in loose order, and the stationary head and shoulders at the butts represent the support of the patrol under cover. At 500 yards they are supposed to break into a rout, and the large moving targets which then commence to move across the butts are supposed to represent the enemy breaking for cover, and consequently exposing themselves more as routed troops do.

The moving targets in the butts are not to be outside the mantlet until the "G" sounds; this will prevent them being fired at before the proper time.

The practice should be carried out off the range.

The moving targets (*i.e.*, the ones that move across the range) could be worked in the usual manner, and the small surprise targets (*i.e.*), the ones that rise up in different parts of the range could be worked by a man in a small pit for each target, connected with rope to a central pit in which a non-commissioned officer would be placed as shown in *fig 8*.

These surprise targets should be placed all over the range and should rise up at the discretion of the non-commissioned officer in the centre pit.

No bugle is to sound to show when one is going to rise up. Each group is to be on view for 25 seconds.

The percentage will be taken as a company.

The whole of the company is to perform this practice together, divided into four sections, which may, if necessary, be divided into sub-sections.

18th practice. Company rapid fire practice.—The object of the practice is to train men in the description of fire they would generally use when a body of the enemy were suddenly discovered, who were pouring a cross-fire into a party of our men, whom the enemy had managed to outflank. The enemy also have field guns.

Targets.—Twenty head and shoulder targets, size and shape as laid down in Musketry Regulations, 1898, section 200, painted black, white and khaki alternate, and placed 3 feet apart and two ordinary gun targets.

Fire will be magazine independent either by company, $\frac{1}{2}$ company, or sections, as ordered by the Captain.

Ammunition will be issued on the company parade ground and magazines will be charged with five rounds. The company will then march to the ground on which the firing is to take place, and when about 1,400 or 1,500 yards from the target will be extended by the Captain to three paces between men and four paces between sections, and at about 1,200 yards the Captain will send out range-finders (who must belong to the company firing) to ascertain the range. When the range-finders discover the range to be about 1,000 yards, they will erect a flag, which will be the firing point. This flag is not to be nearer than 980 or farther than 1,070 yards. The range-finders will then rejoin their company.

During this time the company is still approaching, and when at about 1,100 or 1,150 the Captain will order the bugler to sound the "Commence fire." When at the firing point the Captain will order his company to halt, and will order magazine independent, either by company, $\frac{1}{2}$ company or sections, as he thinks proper, to be opened at once. The whistle is *not* to be used in this practice.

All available cover is to be utilised, and any natural rests may be used.

The percentage will be taken as a company and the practice is to be carried out off the range, if possible.

Time allowed for the five rounds is 45 seconds from the time the Captain has completed his orders regarding the fire. At the expiration of that time the whistle is to be blown, and all unexpended rounds forfeited.

If the gun target is painted on a white back-ground, hits will only count that are on the gun or gunners.

NOTE.

The practice would also be of use to train men in the description of fire they would probably use when a body of the enemy were suddenly discovered at a bridge, attempting to blow it up. They would most probably be in a crowd around the bridge head. Targets (for this practice) would be 16 figure of men targets, size and shape as laid down in practice 15, only not on trollies. They would be placed about 2 feet apart, painted khaki and black alternate; also two ordinary horse targets. Other conditions the same; either idea could be carried out, but not both, entering on the register which one was performed.

19th Practice. Company strong patrol practice.—The object of the practice is to train troops in the description of fire. they would

use when acting as a strong patrol and endeavouring to drive off the enemy's patrols, and discover what his position and strength is behind the patrol.

Targets.—Four lots of surprise targets worked similarly to those described in practice 17 ; 20 chatties whitewashed ; two horse targets “ (moving) ” and two gun targets (stationary).

The 20 chatties will be placed in line, about two paces apart, 400 yards from the butts. The surprise targets will be placed about 200 yards from the butts. The horse (moving) target will be at the butts (behind the mantlet) and the gun targets (stationary) will be at the butts (outside the mantlet), ready to be fired at.

Ammunition will be issued on the company parade ground, and magazines will be charged with four rounds, leaving eight in the pouches. The company will march to the firing ground, preceded by scouts who will halt as soon as they see any of the enemy (*i.e.*, the guns and chatties), and lie down, sending back word at once to the Captain that the enemy is in front with guns. They should halt about 1,400 or 1,500 yards from the butts.

The Captain, at about 1,400 or 1,500 yards from the butts, will extend his company to three paces between men and four paces between sections, and at 1,300 yards will send his range-finders (who must belong to the company firing) to the front to take the range of the *guns and chatties*. The range-finders after finding the range must erect a flag (where the firing will commence from). It is to be about 1,200 yards from the guns (not nearer than 1,180 or farther than 1,260 yards). The range-finders will then join their company.

At about 1,300 yards the Captain will order the bugler to sound the “Commence fire,” and on arrival at the firing point will order his company to halt, and open fire at once on the guns and chatties. He would give the commands “Company—Halt” Right $\frac{1}{2}$ company volleys or independent at the guns, 1,200 (or whatever distance it may be) ; left $\frac{1}{2}$ company volleys or independent at the chatties, 200 (or whatever distance it may be), or *vice versa*.

After firing one round per man, the company will advance in a general line, firing one round at each halt. Halts are to be made where the best cover is available, which the men *must* take advantage of. Natural rests should be used. Any open ground, from halt to halt, is to be crossed at the double in loose order, *i.e.*, about four (or more) paces apart.

After firing four rounds per man at the chatties and four rounds per man at the guns, the Captain will order the bugler to sound the “G” on which the guns will be drawn behind the mantlet, and the surprise targets will commence to work. Neither the guns, or the chatties are to be fired at any more.

The advance from these will be by alternate $\frac{1}{2}$ companies in loose, order at the double from halt to halt. Fire will be by sections (either deliberate volleys or independent as ordered by the Captain) and will be ordered whenever the surprise targets appear. Those targets

will be on view for 25 seconds each time ; four rounds per man will be fired at the surprise targets, by which time the company should have arrived at about 600 from the butts. They are not to go nearer.

The Captain will then order the bugler to sound 2 "Gs," and the surprise targets will stop and drop out of sight. The horse target will then commence to move across the butts, and the captain will order magazine volleys (or independent) by company, $\frac{1}{2}$ company or sections at the horse target. After expending the four rounds in the magazine, the Captain will order the "Cease fire" to sound and will retire his company in loose order to 1,200 yards, after which hits will be checked.

The percentage will be taken as a company and the whole company is to be exercised together.

Firing will be by $\frac{1}{2}$ companies at the guns and chatties, by sections at the surprise targets, and as ordered at the cavalry. When fire is opened at the cavalry, bayonets will be fixed at once by the units firing under cover of each other's fire (*i.e.*), all the sections should not fix together, but one section at a time, so that there is no pause in the firing.

If the chattie is broken, it will be counted as one hit ; if the chattie is not broken, all hits on it will be counted.

Hits on the horse target are only to be counted that are on the horse or rider. Those that are on the white back-ground are not to be counted.

The idea of the practice is this.—After firing the four rounds at the guns and chatties, the guns are supposed to limber up and retire, and the surprise targets which then commence to work when the nine rounds represent the chattie line retiring in groups. When the horse target appears, it represents a body of the enemy's cavalry trying to work round for a flank charge. A heavy magazine fire is opened on them and they are driven back, but the Captain, having forced the enemy's patrol back, decides not to advance any further, as he knows the enemy have guns and cavalry which he has not. He therefore retires out of range unmolested ; as the enemy's guns have retired, his cavalry is severely damaged and his infantry is not strong enough to pursue him, when firing at the surprise targets, only one or two sections should fire at each halt ; this will enable the ammunition to hold out until 600 is reached. The Captain could say which section was to fire at each halt.

The practice should be carried out off the range.

NOTES.

In all the practices in Part III, I have said ammunition to be issued on the company parade ground, and magazines charged (if necessary). My reason for that is because a company going to the firing point is the same as if it were going on the battle-field, and no time would be wasted on the battle-field by halting and issuing ammunition. I think the company should be fully prepared on marching on the ranges,

and fire should be opened at once, for which reason I have said that in all practices in Part III the "Commence fire" should be sounded when the company is about 100 yards from the firing point, so that by the time the company arrives at the firing point, all would be clear and flags drawn in and firing could commence at once.

Similarly, the object and idea of each practice and the method of conducting it should be clearly and fully explained on the company parade ground before starting. Nothing should be left to be done on the firing ground except the actual practice. I am of opinion that all the practices in Part III should be done off the range, because there would then be no known distances visible. In most stations the field firing ground is only a few miles away, and companies could do Part III in the cold weather, going under canvas on the field firing ground.

If absolutely necessary, they could be performed on the range, but they would lose much of their usefulness. I have not said anything about Part IV, because that is a part that is proposed to be left open for the execution of any special ideas and practices, and I have not laid down a company attack, as I consider that in company and regimental field firing the soldier gets two distinct practices in the attack under ordinary conditions.

In conclusion, I hope that I have made myself clear, and not taken up too much time. My idea throughout has been to introduce some practices which would be beneficial to the soldier and of use to him in time of war. Many other useful practices could also be invented. New targets would in some cases be required, but these could be obtained, as now, regimentally. So far as I am aware, no alteration in the construction of ranges would be necessary.

SOME FOREIGN ARTICLES OF SPECIAL INTEREST.

NAPOLEON'S STRATEGICAL POSITION AT THE CLOSE OF THE TRUCE OF POISCHVITZ, 1813.

We have now ascertained what plans the Emperor laid and have traced the course of reasoning, which in all probability led to his decisions. Let us now make a critical survey of his conception of the position of affairs and the measures he took. It is self-evident that we can only gain a partially fair judgment, if we put ourselves wholly in his place, take into consideration the deficiencies of his knowledge of what was going on in the Allies' camp, and free ourselves from all those prejudices which the knowledge of how matters actually eventually turned out must naturally call forth. The histories of the time in our possession are not always free from such prejudices—a fact which has been a fruitful cause of false deductions. Clausewitz very rightly remarked: "It is certainly permissible to judge an occurrence by its event, because this is the best criticism that can be made upon it, but this judgment after the event must never be assumed as a sign of human wisdom; it is only when one has proved that certain facts ought not to have been overlooked or have passed notice that one can offer criticism and pose as a better authority than the Commander whose conduct is under discussion."

The truce expired on the 10th August. Six days later, according to agreement, hostilities might re-open. The Emperor's final orders were dated 13th August; this was consequently the extreme limit of time he had to bring into effect the concentration of his troops on the various fronts in good time. So long a postponement in the divulgence of his intentions to his Generals seems strange in a man whose equal in rapidity of decision cannot be found in military history. It proves that the Emperor was up to the last moment waiting for news, which would very likely influence his plans and that he especially still calculated on a change in the attitude of Austria, which would certainly have altered the whole political and military situation. Not until the expiration of the truce and Austria's declaration of war, did he send the two despatches of the 12th and 13th August to the Marshals.

These two despatches clearly demonstrate that Napoleon had made his plans without having in any way consulted even the foremost Generals in his army. Since Marshal Berthier, Chief of the Staff, was in no wise capable of criticism upon far-reaching strategical combinations, there was no one at his head-quarters at Dresden with whom the Emperor could have consulted, but Marshals St. Cyr, Marmont, Macdonald, and Ney could have been easily assembled for a conference, since they were all either in the immediate neighbourhood of Dresden or within a few days' journey distant. The Emperor's procedure was very different to that of his foes, in whose camp the leaders of the three armies or their deputies were gathered for a whole week's discussion, debates on the steps to be taken lasted the whole day long and sheets upon sheets of memoranda were handed in and

debated. It is a clear example of the difference between the two methods—one by which both the reins, political and military, were gathered in one hand, one will be ruled, one interest and one aim decided; the other, by which there were as many opinions as there were leaders, while the multitude of interests and the variety of objects and aims hindered rather than promoted unity of action. On the other hand, we recognize the haughty self-dependence of the spoilt child of fortune, which led him—wrongly as we shall see—to hold even the most talented of his Marshals not good enough to give him useful advice at such a crisis.

His confident tone and his affected assurance of victory are also apparent evidence of this haughty self-esteem; but only apparent. We should decidedly value Napoleon's mental gifts too low, if we assumed that he was not fully aware of the danger in which he stood. Neither the huge armaments of his enemies escaped that eagle-eye, nor the patriotic spirit of Prussia, nor the revolutionary movement in the States of the Rhenish Confederation. He was no amateur, unable to recognize the failings of his troops, their youth, weakness and faulty training, especially of the cavalry. In conversation with his entourage, in reports from his Marshals, he cannot have failed to observe that with many the belief in his lucky star was waning. He had therefore to direct his efforts to revive and strengthen the old faith in him. Fears which he may perhaps have entertained in his inner consciousness he dared not betray to any one; before his Court and in the instructions to his Generals he was obliged to preserve the same confident tone, as in the days of the zenith of his power, and to so express himself as to his own intentions and those of his enemies, as he desired them to appear in the eyes of others. He fully recognized that the judgment of a man, who in his career had grown so great, would always receive more attention, if expressed with confidence, than the most logical of proof that audacity and a tone of assurance would not fail of effect; and hence it is that all his speeches that have come down to us, all his orders and instructions breathe a spirit of absolute confidence of victory, implicit faith in the success of the campaign just about to open. And, it may be asked, were conditions generally so desperate as justify in him any doubt of the result? By no means. He was still absolute master of France and Italy and Protector of the Rhenish Confederation, while the rich resources of this extensive territory were at his full disposal. He still held possession of every fortress from the Vistula to the Rhine. In two sanguinary battles he had just defeated the Allies, and by an energy and a talent for organization unequalled in history he had brought his armies in Germany and Italy up again to half a million fighting men. Of course everywhere Germany was seething, and the signs of disaffection in the States of the Rhenish Confederation had not escaped him, the reports of his Corps Commanders on the interior condition of the new army were not encouraging, but a great decisive victory would certainly revive the waning faith of his vassals, while the young conscripts had borne themselves under his own eyes at Gross-Gorschen and Bautzen not worse than the old guard itself, in spite of their youth and weakness and

want of training. It is therefore conceivable that a man with the self-confidence of Napoleon, a Commander with such a past, need have had no cause to look into the future with abated courage.

A survey of the general strategical position would but have added to his confidence. The forces of the Allies were divided up into three groups, some distance from one another, from Bohemia to the Mark; the French Army was, as a whole, concentrated in a central position between them. An army concentrated has always, compared with an army that is split up into groups, the advantage of numbers and the further advantage of being under a single command. It could hardly be expected of the leaders of the Allies, whoever they might be, that they would solve the difficult question of bringing armies composed of such heterogeneous elements under one united command, or that they would possess sufficient strength and energy to overcome or even lay aside for a time the many causes of friction which must necessarily arise from the conditions of the coalition. Amongst their Generals there were doubtless many able men, tried too in the field, but not one who could match the Emperor in genius for war. Bernadotte, Wittgenstein and Schwarzenberg, whom rumour pointed out as the probable leaders, could certainly not have inspired Napoleon with apprehension.

We find then, in the picture we have drawn for ourselves, that Napoleon's confident speech was quite intelligible and justified, and we shall find further, if we proceed to study the numberless letters he wrote during the course of the truce, that he was, moreover, very far from careless in any direction or from allowing any prudential measure to escape his notice. The Marshals and Generals had their tasks laid before them in the greatest detail with admirable clearness; and while activity and boldness are impressed upon them, prudence and deliberation are no less enjoined in almost every despatch. Every imaginably possible operation the enemy could adopt is taken into consideration and forces prepared to meet it; special measures are adopted to secure the safety of every point that could in any way be threatened. Nothing escapes the Emperor's observation. His far-seeing eyes are by no means fixed here upon the theatre of war in Saxony; their glance roams to the Lower Elbe, the Rhine, North Italy and Spain; consequently his innumerable orders and directions of that period proved not merely a mine of information for the historian, they are equally and in the highest degree rich in lessons for the Strategist, the Tactician, the Engineer, the Commandant of Communications, the Leader of Troops in the field and the Administrator of Government,—in them every branch of the service of an army may find rules to serve as models of conduct, the careful study of which can be warmly recommended to every officer. "The correspondence," says Lettow-Vorbeck, "provides an insight into the immense powers of organization and of industry of this extraordinary man. He is equally at home in every department; he is the soul of each, from him proceed not merely guiding thoughts, but almost every detail for the execution of plans. His grasp of details is absolutely astounding." But objective criticism must not fail to point out that such a centralization of thought

generally be used by them, when they were in a position and firing at an advancing enemy at medium or long range. The targets will be 20 head and shoulder targets per company, painted, 10 white and 10 black, placed colours alternate, at four paces apart. The shape of targets will be in accordance with Musketry Regulations, 1898, section 200.

Fire will be section deliberate volleys in single rank firing.

Any natural rests may be used, and the men are to take advantage of all existing cover.

Ammunition will be issued on the company parade ground and the company will march to the ground where the targets take place, and when at about 1,500 yards (or more, if possible) from the targets the Captain will extend his company at the double two paces between men and four paces between sections, and when at about 1,100 yards send his range-finders (who must belong to the company firing) to the front to take the range. The range-finders will erect a flag at a point about 80 yards from the target, and this will be the firing point, not to be nearer than 800 or further than 870 yards. During this time the company is still advancing, and when the flag at the firing point is erected, the Captain will order the bugler to sound the "Commence fire" and the range finders will rejoin their company.

On arrival at the firing point the Captain will give the command "Company.—Halt. Volleys at the targets, 800" (or whatever distance may be). If company commanders will repeat if necessary, and so the commanders will at once give the executive commands.

The whole company of four sections (or more if there are casualties which may, if necessary, be divided into sub-sections, is to be exercised at once, and section commanders are to give the commands "Fire," etc., irrespective of what commands are being given on the right or left, *i.e.*, they are not to wait for each other to fire before they come to the "present." The whistle should be used to steady the fire and correct the elevation, if necessary.

Each section may fire on any of the 20 targets, the percentage will be taken as a company.

The practice should be carried out off the range, but it is a compulsory.

17th practice. Company surprise practice.—The object of the practice is to accustom men in the description of fire and action, they would generally use when attempting to drive a small party of the enemy backward, who, as they retreated, kept getting up in small groups and opening fire. A patrol of the enemy, in a small force, may be supposed to have been endeavouring to reconnoitre the lines and posts, and a company is sent to drive them away. The practice is also a training for officers and section commanders in quickly discerning an enemy appearing in different places for a short time only.

Targets.—Five groups of surprise targets consisting of three head and shoulders of men to a group (see *fig 7*), size of each figure exactly the same as that laid down in Musketry Regulations, 1898, section 200. Painted khaki and black by alternate groups and placed in different parts of the range.

Ten head and shoulder targets, size and shape as laid down in Musketry Regulations, 1898, section 200. These will be placed across the front of the butts four paces between each. Two moving men targets, size and shape as laid down in practice 15. These will be behind the mantlets out of sight.

Fire.—Up to 500 yards will be “deliberate volleys” or “independent” either company, $\frac{1}{2}$ company or sectional as ordered by the Captain. At 500 yards (and not till then) magazine volley or independent will be ordered at the moving target in the butts.

Position any. All cover is to be most carefully taken advantage of, and any natural rests near the firer may be used.

Sights for distance the whole way.

Ammunition will be issued on the company parade ground, and magazines will be charged with four rounds, leaving eight in the pouches.

The company will be marched on to the ground where the firing is to take place (preceded by scouts), who will halt and lie down as soon as they discover the enemy (*i.e.*, the head and shoulder stationary targets at the butts), sending back word at once to the Captain. They should not go nearer to the butts than about 1,200 yards. When the company is about 1,400 or 1,500 yards from the butts, the Captain will extend his company at the double to three paces between men and four between sections, and when at about 1,200 yards or so will send his range-finders (who must belong to the company firing) out to the front to take the range, and they will erect a flag at which the firing is to commence. This flag is not to be nearer than 1,000 yards or further than 1,080 from the butts. After erecting the flag the range-finders will rejoin their company. The scouts will join the company as it comes up to them.

At about 1,100 yards the Captain will order the bugler to sound the “Commence fire” (on which the surprise targets will commence to work, one group rising at a time), and on arrival at the firing point will order his company to halt, and give orders for whatever description of fire he wishes at either the stationary head and shoulder targets at the butts, or the surprise targets on the range.

After firing, the company will advance in double time, taking advantage of all cover; open ground to be crossed in loose order at the double. The eight rounds in the pouch are to be expended in the advance up to 500 yards. Only one round is to be fired at each halt. Not more than three rounds per man should be fired at the stationary targets, the remaining five at the surprise targets as they appear. It is to be distinctly understood that the eight rounds are to be expended in the advance; they are not to be saved up until the company reaches the shorter ranges.

On arrival at about 500 the Captain will order the bugle to sound the "G" and the two moving targets (referred to above) will commence to move across the butts and the surprise targets will cease working. The Captain will at once open magazine fire (either "Volleys or Independent") on them and will not fire at the stationary head and shoulders, or the surprise targets any more. When the four rounds in the magazine are expended the "Cease fire" will be sounded, and the targets examined, the company being marched up to see them.

Range-finders are to be used up to 800 yards, but not nearer (as it is impracticable). After that the distance must be judged by the advances made each time and the effect of the fire. The range-finders would only be able to take range on the stationary targets, there would not be sufficient time for them to take the surprise targets.

The small surprise targets are intended to represent a general retreat of the enemy's patrol in loose order, and the stationary head and shoulders at the butts represent the support of the patrol under cover. At 500 yards they are supposed to break into a rout, and the large moving targets which then commence to move across the butts are supposed to represent the enemy breaking the cover, and consequently exposing themselves more as routed troops do.

The moving targets in the butts are not to be outside the marking until the "G" sounds; this will prevent them being fired at before the proper time.

The practice should be carried out off the range.

The moving targets (*i.e.*, the ones that move across the range) could be worked in the usual manner, and the small surprise targets (*i.e.*, the ones that rise up in different parts of the range) could be worked by a man in a small pit for each target, connected with rope to a central pit in which a non-commissioned officer would be placed as shown in fig 8.

These surprise targets should be placed all over the range and should rise up at the discretion of the non-commissioned officer in the centre pit.

No bugle is to sound to show when one is going to rise up. Each group is to be on view for 25 seconds.

The percentage will be taken as a company.

The whole of the company is to perform this practice together, divided into four sections, which may, if necessary, be divided into sub-sections.

15th practice. Company rapid fire practice—The object of the practice is to train men in the description of fire they would generally use when a body of the enemy were suddenly discovered, who were pouring a cross fire into a party of our men, whom the enemy had managed to outflank. The enemy also have field guns.

Targets.—Twenty head and shoulder targets, size and shape as laid down in Musketry Regulations, 1898, section 200, painted black, white and khaki alternate, and placed 3 feet apart and two ordinary gun targets.

Fire will be magazine independent either by company, $\frac{1}{2}$ company, or sections, as ordered by the Captain.

Ammunition will be issued on the company parade ground and magazines will be charged with five rounds. The company will then march to the ground on which the firing is to take place, and when about 1,400 or 1,500 yards from the target will be extended by the Captain to three paces between men and four paces between sections, and at about 1,200 yards the Captain will send out range-finders (who must belong to the company firing) to ascertain the range. When the range-finders discover the range to be about 1,000 yards, they will erect a flag, which will be the firing point. This flag is not to be nearer than 980 or farther than 1,070 yards. The range-finders will then rejoin their company.

During this time the company is still approaching, and when at about 1,100 or 1,150 the Captain will order the bugler to sound the "Commence fire." When at the firing point the Captain will order his company to halt, and will order magazine independent, either by company, $\frac{1}{2}$ company or sections, as he thinks proper, to be opened at once. The whistle is *not* to be used in this practice.

All available cover is to be utilised, and any natural rests may be used.

The percentage will be taken as a company and the practice is to be carried out off the range, if possible.

Time allowed for the five rounds is 45 seconds from the time the Captain has completed his orders regarding the fire. At the expiration of that time the whistle is to be blown, and all unexpended rounds forfeited.

If the gun target is painted on a white back-ground, hits will only count that are on the gun or gunners.

NOTE.

The practice would also be of use to train men in the description of fire they would probably use when a body of the enemy were suddenly discovered at a bridge, attempting to blow it up. They would most probably be in a crowd around the bridge head. Targets (for this practice) would be 16 figure of men targets, size and shape as laid down in practice 15, only not on trollies. They would be placed about 2 feet apart, painted khaki and black alternate; also two ordinary horse targets. Other conditions the same; either idea could be carried out, but not both, entering on the register which one was performed.

19th Practice. Company strong patrol practice.—The object of the practice is to train troops in the description of fire they would

use when acting as a strong patrol and endeavouring to drive off the enemy's patrols, and discover what his position and strength is behind the patrol.

Targets.—Four lots of surprise targets worked similarly to those described in practice 17; 20 chatties whitewashed; two horse targets " (moving) " and two gun targets (stationary).

The 20 chatties will be placed in line, about two paces apart, 40 yards from the butts. The surprise targets will be placed about 20 yards from the butts. The horse (moving) target will be at the rear (behind the mantlet) and the gun targets (stationary) will be at the butts (outside the mantlet), ready to be fired at.

Ammunition will be issued on the company parade ground, and magazines will be charged with four rounds, leaving enough in the pouches. The company will march to the firing ground, preceded by scouts who will halt as soon as they see any of the enemy (the guns and chatties), and lie down, sending back word at once to the Captain that the enemy is in front with guns. They shall be about 1,400 or 1,500 yards from the butts.

The Captain, at about 1,400 or 1,500 yards from the butts, will extend his company to three paces between men and four paces between sections, and at 1,300 yards will send his range-finders (who belong to the company firing) to the front to take the range of the guns and chatties. The range-finders after finding the range will erect a flag (where the firing will commence from). It is to be about 1,200 yards from the guns (not nearer than 1,180 or farther than 1,220 yards). The range-finders will then join their company.

At about 1,300 yards the Captain will order the bugler to sound the "Commence fire," and on arrival at the firing point will order the company to halt and open fire at once on the guns and chatties. He would give the commands "Company—Halt." Right $\frac{1}{2}$ company volleys or independent at the guns, 1,200 (or whatever distance it may be); left $\frac{1}{2}$ company volleys or independent at the chatties, 200 (or whatever distance it may be), or *vice versa*.

After firing one round per man, the company will advance in a general line, firing one round at each halt. Halts are to be made where the best cover is available, which the men *must* take advantage of. Natural rests should be used. Any open ground, from halt to halt, is to be crossed at the double in loose order, *i.e.*, about four (or more) paces apart.

After firing four rounds per man at the chatties and four rounds per man at the guns, the Captain will order the bugler to sound the "G" at which the guns will be drawn behind the mantlet, and the surprise targets will commence to work. Neither the guns, or the chatties are to be fired at any more.

The advance from these will be by alternate $\frac{1}{2}$ companies in loose order at the double from halt to halt. Fire will be by sections (either deliberate volleys or independent as ordered by the Captain) and will be ordered whenever the surprise targets appear. Those targets

will be on view for 25 seconds each time ; four rounds per man will be fired at the surprise targets, by which time the company should have arrived at about 600 from the butts. They are not to go nearer.

The Captain will then order the bugler to sound 2 "Gs." and the surprise targets will stop and drop out of sight. The horse target will then commence to move across the butts, and the captain will order magazine volleys (or independent) by company, $\frac{1}{2}$ company or sections at the horse target. After expending the four rounds in the magazine, the Captain will order the "Cease fire" to sound and will retire his company in loose order to 1,200 yards, after which hits will be checked.

The percentage will be taken as a company and the whole company is to be exercised together.

Firing will be by $\frac{1}{2}$ companies at the guns and chatties, by sections at the surprise targets, and as ordered at the cavalry. When fire is opened at the cavalry, bayonets will be fixed at once by the units firing under cover of each other's fire (*i.e.*), all the sections should not fix together, but one section at a time, so that there is no pause in the firing.

If the chattie is broken, it will be counted as one hit ; if the chattie is not broken, all hits on it will be counted.

Hits on the horse target are only to be counted that are on the horse or rider. Those that are on the white back-ground are not to be counted.

The idea of the practice is this.—After firing the four rounds at the guns and chatties, the guns are supposed to limber up and retire, and the surprise targets which then commence to work when the nine rounds represent the chattie line retiring in groups. When the horse target appears, it represents a body of the enemy's cavalry trying to work round for a flank charge. A heavy magazine fire is opened on them and they are driven back, but the Captain, having forced the enemy's patrol back, decides not to advance any further, as he knows the enemy have guns and cavalry which he has not. He therefore retires out of range unmolested ; as the enemy's guns have retired, his cavalry is severely damaged and his infantry is not strong enough to pursue him, when firing at the surprise targets, only one or two sections should fire at each halt ; this will enable the ammunition to hold out until 600 is reached. The Captain could say which section was to fire at each halt.

The practice should be carried out off the range.

NOTES.

In all the practices in Part III, I have said ammunition to be issued on the company parade ground, and magazines charged (if necessary). My reason for that is because a company going to the firing point is the same as if it were going on the battle-field, and no time would be wasted on the battle-field by halting and issuing ammunition. I think the company should be fully prepared on marching on the ranges,

and fire should be opened at once, for which reason I have said that in all practices in Part III the "Commence fire" should be sounded when the company is about 100 yards from the firing point, so that by the time the company arrives at the firing point, all would be clear and flags drawn in and firing could commence at once.

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If absolutely necessary, they could be performed on the range, but they would lose much of their usefulness. I have not said anything about Part IV, because that is a part that is proposed to be left open for the execution of any special ideas and practices, and I have not said down a company attack, as I consider that in company and regimental field firing the soldier gets two distinct practices in the attack under ordinary conditions.

In conclusion, I hope that I have made myself clear, and not taken up too much time. My idea throughout has been to introduce some practices which would be beneficial to the soldier and of use to him in time of war. Many other useful practices could also be invented. New targets would in some cases be required, but these could be obtained, as now, regimentally. So far as I am aware, no alterations in the construction of ranges would be necessary.

SOME FOREIGN ARTICLES OF SPECIAL INTEREST.

NAPOLEON'S STRATEGICAL POSITION AT THE CLOSE OF THE TRUCE OF POISCHVITZ, 1813.

We have now ascertained what plans the Emperor laid and have traced the course of reasoning, which in all probability led to his decisions. Let us now make a critical survey of his conception of the position of affairs and the measures he took. It is self-evident that we can only gain a partially fair judgment, if we put ourselves wholly in his place, take into consideration the deficiencies of his knowledge of what was going on in the Allies' camp, and free ourselves from all those prejudices which the knowledge of how matters actually eventually turned out must naturally call forth. The histories of the time in our possession are not always free from such prejudices—a fact which has been a fruitful cause of false deductions. Clausewitz very rightly remarked: "It is certainly permissible to judge an occurrence by its event, because this is the best criticism that can be made upon it, but this judgment after the event must never be assumed as a sign of human wisdom; it is only when one has proved that certain facts ought not to have been overlooked or have passed notice that one can offer criticism and pose as a better authority than the Commander whose conduct is under discussion."

The truce expired on the 10th August. Six days later, according to agreement, hostilities might re-open. The Emperor's final orders were dated 13th August; this was consequently the extreme limit of time he had to bring into effect the concentration of his troops on the various fronts in good time. So long a postponement in the divulgence of his intentions to his Generals seems strange in a man whose equal in rapidity of decision cannot be found in military history. It proves that the Emperor was up to the last moment waiting for news, which would very likely influence his plans and that he especially still calculated on a change in the attitude of Austria, which would certainly have altered the whole political and military situation. Not until the expiration of the truce and Austria's declaration of war, did he send the two despatches of the 12th and 13th August to the Marshals.

These two despatches clearly demonstrate that Napoleon had made his plans without having in any way consulted even the foremost Generals in his army. Since Marshal Berthier, Chief of the Staff, was in no wise capable of criticism upon far-reaching strategical combinations, there was no one at his head-quarters at Dresden with whom the Emperor could have consulted, but Marshals St. Cyr, Marmont, Macdonald, and Ney could have been easily assembled for a conference, since they were all either in the immediate neighbourhood of Dresden or within a few days' journey distant. The Emperor's procedure was very different to that of his foes, in whose camp the leaders of the three armies or their deputies were gathered for a whole week's discussion, debates on the steps to be taken lasted the whole day long and sheets upon sheets of memoranda were handed in and

debated. It is a clear example of the difference between the two methods—one by which both the reins, political and military, were gathered in one hand, one will be ruled, one interest and one aim directed; the other, by which there were as many opinions as there were leaders, while the multitude of interests and the variety of objects and aims hindered rather than promoted unity of action. On the other hand, we recognize the haughty self-dependence of the spoiled child of fortune, which led him—wrongly as we shall see—to hold even the most talented of his Marshals not good enough to give him useful advice at such a crisis.

His confident tone and his affected assurance of victory are a so apparent evidence of this haughty self-esteem; but only apparent. We should decidedly value Napoleon's mental gifts too low, if we assumed that he was not fully aware of the danger in which he stood. Neither the huge armaments of his enemies, escaped that eagerness, nor the patriotic spirit of Prussia, nor the revolutionary movement in the States of the Rhenish Confederation. He was no amateur, unable to recognize the failings of his troops, their youth, weakness and faulty training, especially of the cavalry. In conversation with his entourage, in reports from his Marshals, he cannot have failed to observe that with many the belief in his lucky star was waning. He had therefore to direct his efforts to revive and strengthen the old faith in him. Fears which he may perhaps have entertained in his inner consciousness he dared betray to no one; before his Court and in the instructions to his Generals he was obliged to preserve the same confident tone, as in the days of the zenith of his power, and to so express himself as to his own intentions and those of his enemies, as he desired them to appear in the eyes of others. He fully recognized that the judgment of a man, who in his career had grown so great, would always receive more attention, if expressed with confidence, than the most logical of proof that audacity and a tone of assurance would fail of effect; and hence it is that all his speeches that have come down to us, all his orders and instructions breathe a spirit of absolute confidence of victory, implicit faith in the success of the campaign just about to open. And, it may be asked, were conditions generally so desperate as justify in him any doubt of the result? By no means. He was still absolute master of France and Italy and Protector of the Rhenish Confederation, while the rich resources of this extensive territory were at his full disposal. He still held possession of every fortress from the Vistula to the Rhine. In two sanguinary battles he had just defeated the Allies, and, by an energy and a talent for organization unequalled in history he had brought his armies in Germany and Italy up again to halt a million fighting men. Of course everywhere Germany was seething, and the signs of disaffection in the States of the Rhenish Confederation had not escaped him, the reports of his Corps Commanders on the interior condition of the new army were all encouraging, but a great decisive victory would certainly revive the waning faith of his vassals, while the young conscripts had borne themselves under his own eyes at Gross-Gorschen and Bautzen not worse than the old guard itself, in spite of their youth and weakness and

want of training. It is therefore conceivable that a man with the self-confidence of Napoleon, a Commander with such a past, need have had no cause to look into the future with abated courage.

A survey of the general strategical position would but have added to his confidence. The forces of the Allies were divided up into three groups, some distance from one another, from Bohemia to the Mark; the French Army was, as a whole, concentrated in a central position between them. An army concentrated has always, compared with an army that is split up into groups, the advantage of numbers and the further advantage of being under a single command. It could hardly be expected of the leaders of the Allies, whoever they might be, that they would solve the difficult question of bringing armies composed of such heterogeneous elements under one united command, or that they would possess sufficient strength and energy to overcome or even lay aside for a time the many causes of friction which must necessarily arise from the conditions of the coalition. Amongst their Generals there were doubtless many able men, tried too in the field, but not one who could match the Emperor in genius for war. Bernadotte, Wittgenstein and Schwarzenberg, whom rumour pointed out as the probable leaders, could certainly not have inspired Napoleon with apprehension.

We find then, in the picture we have drawn for ourselves, that Napoleon's confident speech was quite intelligible and justified, and we shall find further, if we proceed to study the numberless letters he wrote during the course of the truce, that he was, moreover, very far from careless in any direction or from allowing any prudential measure to escape his notice. The Marshals and Generals had their tasks laid before them in the greatest detail with admirable clearness; and while activity and boldness are impressed upon them, prudence and deliberation are no less enjoined in almost every despatch. Every imaginably possible operation the enemy could adopt is taken into consideration and forces prepared to meet it; special measures are adopted to secure the safety of every point that could in any way be threatened. Nothing escapes the Emperor's observation. His far-seeing eyes are by no means fixed here upon the theatre of war in Saxony; their glance roams to the Lower Elbe, the Rhine, North Italy and Spain; consequently his innumerable orders and directions of that period proved not merely a mine of information for the historian, they are equally and in the highest degree rich in lessons for the Strategist, the Tactician, the Engineer, the Commandant of Communications, the Leader of Troops in the field and the Administrator of Government,—in them every branch of the service of an army may find rules to serve as models of conduct, the careful study of which can be warmly recommended to every officer. "The correspondence," says Lettow-Vorbeck, "provides an insight into the immense powers of organization and of industry of this extraordinary man. He is equally at home in every department; he is the soul of each, from him proceed not merely guiding thoughts, but almost every detail for the execution of plans. His grasp of details is absolutely astounding." But objective criticism must not fail to point out that such a centralization of thought

and action in the Emperor's own person, in spite of his great genius, could not fail to have its disadvantages. It is obvious that not thus were Generals produced ready to accept responsibility, and the defeats which the Marshals, thrown more than usually upon their own resources, suffered in this campaign are directly traceable to the Napoleonic system.

To turn now to the details of Napoleon's plans. A number of critics have found fault with the choice by the Emperor of the Elbe as a base of operations, and because he did not retire behind the line of the Rhine or at all events of the Saale. The reasons adduced for the former view are hardly worth taking seriously. There was no necessity whatever for retreating so far, while to have done so would have been an unparalleled acknowledgment of moral defeat, would have summoned all Europe in arms to the frontiers of France, and would have left the fate of the Rhenish Confederation, Holland, Switzerland and Italy to the mercy of the Allies ; it would have been preferable to accept all the conditions of peace they had offered. The object of the struggle was for Napoleon the attainment of peace on as favourable terms as possible. If, however, he was unable to obtain peace, favourable from his point of view, after a victorious advance to the banks of the Oder, one can easily calculate what kind of peace would have been granted him after a voluntary retirement back to the Rhine. Besides, as Jomini justly shows, Napoleon's forces would by no means have sufficed to guard the line of the Rhine from Basel to Amsterdam, the less so, as he would have been forced to leave a large proportion of his army as garrisons of numerous fortresses. "Instead of shutting up 150,000 men in fortresses and putting France under contribution, we kept all these forces active, reinforced them from the Rhenish contingents and carried on the war far from our own territory."

A retirement to behind the Saale would have given Napoleon the advantage of not having his base line flanked by the salient angle of Bohemian territory ; but the Saale is not a river-barrier like the Elbe, and Napoleon would have foregone all the advantages, which the possession of the numerous Elbe fortresses and crossing places assured him. The flanking of the Elbe line, upon which the Allied Generals in the spirit of the time laid so much stress, gave Napoleon no uneasiness. In his eminently practical view he thought little of strategical disadvantages in regard to the general position, and was even of opinion that every such disadvantage could be easily counterbalanced by tactical successes in the field. Above all things, tactical victory was what he sought for, and he judged a position by the possibility of gaining tactical success. It was therefore all the same to him, whether, as rumour went, the Austrians should take the offensive in the direction of Munich, fall upon the States of the Rhine, and cut his communications with the Rhine and France. For any such extensive operations time would be needed, and successes which might lie within the bounds of possibility for his enemies in the course of weeks could be rendered impossible by immediate victories at

their inception. If the Austrian Army should turn on South Germany, it would be absent from the scene of the decisive battle fought in Saxony or Silesia. The temporary interruption of his communications with France had no danger for Napoleon; he could dispense with the inconvenience for some time, and they would be restored again as soon as the Russo-Prussian Army in Silesia had been defeated. Besides which the Allied Forces operating in South Germany would run precisely the same danger as the French Army did of having its communications with its base cut off.

It is no easy matter to attempt to criticize a master of war like Napoleon. One can but point out that the run of his reasoning, as we have sketched it in the preceding paragraph, does not correspond with the standard, methodical conduct of war. As Napoleon himself had said: "Every well-conducted campaign is a methodically conducted campaign," and, as he wrote to his brother, the King of Spain, in 1808: "The art of war is an art, which has principles, which it is never permissible to violate." The security of the rear communications against interruption and threat of danger from the enemy he reckons in the first line of these fundamental principles, and elsewhere he describes this principle as the A B C of the art of war. Napoleon therefore here, in laying no importance on the outflanking of his base and in declaring his indifference with regard to the rupture of his communications with the Rhine and France, set himself in direct opposition with the very principles, which at other times, he had pronounced to be fundamental and determinative. To act methodically, according to his own rules, Napoleon would have had to confess that the line of the Elbe was only to be preferred as a base of operations as long as he had Russia and Prussia alone to deal with, but that after Austria had declared against him and the theatre of war had in consequence widened, extending from the shores of the Baltic to the coast of the Adriatic, he ought to have selected a base much further south so as to set the French Army almost or quite in the centre of the great war to be expected. Then an interruption of his communications with France need not have been feared. However, the Emperor was, on the other hand, undoubtedly right, when, in the conviction that success depended on co-operation between his various forces rather than on the schematic application of hard and fast rules, he set himself above doubt and scruple and rule, and assumed that a temporary interruption of his rearward communications would be immediately relieved by a victory won in Saxony. Yet involuntarily the question rises: How if the battle went against him? If then the Austrian Army lay on his line of retreat with 125,000 men, a situation, very like that on the Beresina, might easily develop.

Suppositions and deductions of this kind were foreign to Napoleon's character. Quite different motives weighed the scale for him. In the campaign of the spring of the year he had reconquered Germany up to the Oder, and his high spirit forbade him now to yield even a foot-breadth without compulsion. "Did Alexander,

Hannibal or Cæsar concern themselves for their lines of retreat, when the moment came to fight for the mastery of the world" ? as to the correctness or incorrectness of strategical decisions, says Moltke, in most cases the result alone can decide. The campaign of 1813 certainly turned out ill for the Emperor, but its course showed that it was neither the threatening nor the rupture of his communications with France which produced that result.

Let us take the line of the Elbe as the accepted base of operations and pursue our enquiries further.

The question now before Napoleon was whether to take an offensive or a defensive rôle in the war. We have traced the reasoning and the grounds which determined him upon the strategic defensive. To appreciate this properly, we must bear in mind that he must have assumed the Russo-Prussian main army to be in Silesia. This being so, an offensive rôle against the main army of his enemies, that is to say, against the point at which the critical fight must be fought out, was impossible under the circumstances and on the grounds named above. To wait therefore and see what this main army would do, to let him come on, was the only thing to do. The grouping of the forces in Silesia and Saxony can only be approved on the same grounds,—it allowed of making front in any direction and of opposing every probable point of attack with at least equal forces.

In regard to this, critics, taking a very false view of the situation, have often blamed the Emperor by pointing out "how the grouping of his forces proves that he kept in view a march of the Austrian Army into Silesia, and not of the Russians and Prussians from Silesia into Bohemia in spite of the military and political point of gravity being necessarily where the main army and head-quarters of the three Monarchs were, and although a great victory energetically followed up would have ended the war surely and quickly." This reproach is unjustified. The critic who assumes that Napoleon should have sought for the military point of gravity in Bohemia at the time, when he must have had to take his final resolutions, judges not from the position in which the Emperor actually was, but from a standpoint of later knowledge allowing of a view of affairs, which Napoleon could not possibly have had at the time. Napoleon's resolutions must have been taken, in outline, during the last days of the truce, that is, about the 10th August, since otherwise he could not have had time to post his troops in their various positions. On the 10th August there were only the Austrian Army, which the Emperor fairly regarded as his least dangerous adversary, in Bohemia, and whose strength he calculated at 100,000 men, whilst the Russo-Prussian Army, reckoned as 200,000 strong, were in Silesia. How then could Napoleon have expected to find the military centre of gravity in Bohemia? How could he foresee that on the 11th 120,000 Russians and Prussians would quietly move over into Bohemia and thus alter the whole position of affairs? We must therefore not merely regard the reproach as unjustified

but judging from Napoleon's character and the spirit in which he had hitherto always acted, are even constrained to assume that, on hearing of this flank march of the Allies, he would not have lost a moment in changing his base of operations to South Germany and in seizing the offensive against the new main army of his opponents. His position would have become simpler, because clearer; he might well have entertained hopes of bringing off a decisive action, which he had always regarded as the one solution of a difficult situation, and he would at last have an objective to operate against, whose annihilation must have in any circumstances brought him peace with favourable conditions.

Thus was the Emperor for the first time in the course of his life forced by circumstances to hold himself on the defensive, and to suffer being dictated to by his enemies. We have already pointed out above how greatly this form of action was opposed to the impatient nature of the man, how loudly the whole state of affairs in the French Army demanded a decisive battle; we shall therefore find it psychologically intelligible that he should endeavour to take the offensive with, at all events, a portion of his forces. He, skilled connoisseur that he was of the French national character, felt too that it was necessary for the tranquillization of public opinion and for the re-establishment of popular regard in France, to say nothing of the half rebellious States of the Confederation, to quickly win a dazzling victory. These considerations all beckoned him, he thought, towards the northern theatre of war. Accordingly he determined to break off with 70,000 men and act vigorously on the offensive in the direction of Berlin.

In judging this decision of his, we have to propound two questions: Was the offensive, undertaken with a portion only of his forces, justified under existing circumstances? Was the direction of his attack correctly chosen?

To the first question the answer must be: No.

From the various despatches written by the Emperor at this time it is clearly and distinctly manifest that he was expecting an attack by the Russo-Prussian Army from the direction of Silesia upon Dresden, combined with a flank attack by the Austrian Army by way of Gabel-Zittau. He had been convinced that this was their intention not only from the definite reports made by his agents in Vienna of the plans of the Allies proceeding from that city, but also because he considered that this operation on the part of his enemy would be attended with the greatest danger to himself, and because without doubt he would have acted so in their place. He reckoned the strength of the two hostile armies at 300,000 men. If he now detached so considerable a force from his own army (70,000 men) and contented himself with placing opposite the 300,000 only an equal number, he at once renounced one of the chief factors of victory—numerical superiority. So here again he set himself in opposition to his past, for surely it was he, who had introduced into the modern science of war numerical superiority as a main factor

of victory, of which the wars of the 18th century knew nothing. "The Science of War," he had said, "consists of having when with an army in inferior strength superior forces at the point at which one attacks or is attacked." "If one wants to fight a battle, the rule is to concentrate all one's forces. A single battalion often makes all the difference in the fate of a day": he said in another place

* * * * All theorists in fact are agreed in requiring a concentration of force against the principal forces of the enemy. This fundamental rule is indeed so simple and obvious that ironical comment upon it has not been wanting. It has been pointed out that it is very easy to wish to throw concentrated forces upon the critical point, but that the art really consists in correctly discerning this point. This is quite right. But in the case before us not the least doubt could prevail. The principal enemy was the principal army, that of the Russians and Prussians; against these alone could a victory be won that would decide the general issue of the war; all successes on the neighbouring theatres of war, great and dazzling as they might be, could weigh but little in the scale. While if the principal hostile army were decisively defeated, victories elsewhere would only be a matter of time; they must fall of themselves, like ripe fruit, into the lap of the conqueror.

We can therefore only stigmatize the adoption of the offensive with a portion of the army as a great mistake. It weakened the French forces at the very point, at which they had necessarily to meet with the greatest numbers of the enemy, to say nothing of the fact that Napoleon's calculation of the strength of the Allies rested only upon irresponsible reports, and surprises awaited him in this regard as well.

The second question is of far less importance, namely, in which direction the attack should have been directed, whether against the Crown Prince of Sweden or against the Austrian Army. Both offered fair prospects of success, as has been shown above, and since 1813 the question, which was preferable, has been a standing argument in military literature. Taking the whole position of affairs, perhaps the offensive against the Northern Army seems the course the more likely to have led quickly to great success, as well as to have been the less hazardous, since Magdeburg and Wittenberg always ensured the line of retreat. "It is easy", as Count Yorck very rightly says, "to criticize the offensive operations in the Mark of Brandenburg with pre-knowledge of the later defeats at Gross-beeren and Donnewitz, yet, whilst it must be said that the latter could not have been foreseen, the Emperor was, on the whole, clearly justified in expecting a different result." Assuredly, in order to bring about a different result, it would have been necessary to judge of the conditions prevailing in the northern theatre of war with less prejudice than Napoleon showed. He certainly judged the Commander of the Northern Army, his old comrade in arms, Bernadotte, correctly, and it would hardly be possible to characterize that General's behaviour throughout the campaign better than in Napoleon's contemptuous words—"Il ne fera que piaffer", while the Emperor could hardly have

forescen that the Crown Prince's subordinate leaders would break down all the barriers of the military hierarchy, accept battles against their superior officer's wishes, and carry them through to victory. But there was no excuse for his having appointed to lead the troops detailed against the Crown Prince, a man, who, though personally pre-eminently brave, was so totally incapable of the independent command of an army, as Marshal Oudinot; nor for not having better acquainted himself with the numerical strength of the Allies; nor for having so little conception of the spirit pervading the whole of Prussia and her army and in consequence for having unardonably under-rated the military value of the Landwehr troops. This is all the more surprising in the "Great Son of the Great Revolution," since he indeed both at the opening of his military career and latterly again in Spain had had opportunity enough to observe, of what such a militia was capable, when it fought for all that men hold most sacred and most dear, for freedom and the independence of their native land, for national honour and their own royal house.

It is certain that Napoleon's decisions were based upon a very deficient knowledge of circumstances in the allied armies, and that especially with regard to their numerical strength he went on totally false conclusions. Clausewitz remarks that—"The Commander, who is compelled to base his decisions upon given facts without possibility of knowing whether they are correct or not, is exposed continually to the danger of errors, but is held excused. He can only be blamed, if it is proved that others in a like position and dependent upon equally deficient material have arrived at better, more correct conclusions."

In his despatch of the 12th August the Emperor demanded of Marshals Ney, Macdonald, St. Cyr and Marmont a free expression of their opinions upon the plan of operations he had imparted to them. It is of the highest interest to learn what these opinions were, because they sprang from a knowledge of the general situation very similar to that of the Emperor.

The replies came in from the Marshals in the course of the next day or two. Ney and Macdonald said that they could only approve of the Emperor's views and were convinced that the campaign about to open would be a fresh source of honour and glory for themselves and the French Army. No particular value is to be put on this answer. Doubtless Marshals Ney and Macdonald were two of the most brilliant personages who figured in the First Empire, whilst they were favourites even with Germans by reason of their bravery and often exhibited chivalrous feeling. But at a time of general turmoil, tossed by the waves of fortune within the course of a few years to the highest posts in the military hierarchy, half educated as they were and without compensatory talents, they had had neither the time nor the capacity to systematize their rich experience of war and to raise themselves thereby to independent views and judgment in strategical questions. Talent and routine had made them, as they had Oudinot, able Corps Commanders, but few opportunities had fallen to them on the one hand for the independent consideration of ways and means,

and on the other they had had no help from Napoleon to guide them towards the habit of adopting independent opinions. Neither therefore were very capable of offering opinions of any value upon the tangled conditions of an extensive theatre of war.

It was otherwise with Marshals St. Cyr and Marmont. Both of these men were well equipped in education, training and intelligence, had often held independent commands and added to a large war experience sound theoretical knowledge. Their opinions therefore are of interest and value.

Gouvion St. Cyr on the morning of the 13th August had a long interview with the Emperor, when he freely explained his own views. He pointed out to the Emperor that, judging by the positions in which he had placed the various groups of the army, he seemed to assume that the Austrians would advance by the Gabel-Zittau road, whereas in his (St. Cyr's) opinion, they would in far greater likelihood operate on the left bank of the Elbe. He deemed it hazardous, too, to assume the offensive at different, widely separated points and to advance a large force towards Berlin, while the intention was simultaneously to fight a decisive battle in Silesia or on the Bohemian frontier. In his opinion it would have been advisable to remain on the defensive on the whole line of the Elbe, to concentrate some 150,000 men on the left bank of that river in a good position for defence between Magdeburg and Dresden, and to attack Bohemia energetically with the main body of the army. Disowning the intention of belittling the importance of capturing Berlin, he nevertheless considered that that ought not to be the primary object of attack: "The difficulties of an advance against Berlin would be far more considerable than the Emperor seemed to believe; besides, with the Prussians and Swedes, the new formed levies of the Landwehr and Landsturm had to be dealt with, which were not altogether as contemptible as the Emperor thought; Bernadotte's forces would certainly prove in superior strength to those detailed for the attack on Berlin; Berlin was very well able to offer serious resistance, while the enthusiasm for the war, which pervaded all Prussia, was a motive force that deserved serious consideration." In array against these cogent objections to operations against Berlin, St. Cyr. set the reasons for preferring an adoption of his own plan in eloquent terms: "If the Emperor would concentrate 150,000 men between Magdeburg and Dresden, his depôts and magazines would be covered from any hostile attempt, his communications with France would remain secure, and he could turn his undivided attention upon Austria. Without the assistance of her Allies, Austria could not save her States from the French invasion, and this assistance would probably not come before the decisive blows had fallen. Prague would be the pivot of his operations in Bohemia. On the upper Elbe and on the left bank of the Moldau he would find favourable positions, should circumstances compel him to temporarily yield the offensive. He would bring himself into close touch with the Bavarian Army, which was being formed on the Austrian frontier and would thereby confirm anew the closeness of the alliance with Bavaria. Finally, he would relieve his ally, Saxony, already more than

half ruined by the war, of the hardships of a campaign and would impose them upon a hostile and not yet exhausted country."

Summarized St. Cyr's plan amounted to this,—the complete abandonment of an attack on the Northern Army, the evacuation of the theatre of war east of the Elbe, posting an army of 150,000 men on the left bank of the Elbe, an attack on Bohemia with 250,000 men. It seems superfluous to look closer into this plan; it was one like any other, which might succeed and might as easily fail. The pros and cons regarding an attack on Bohemia had certainly been weighed by Napoleon. There was no doubt that St. Cyr's plans had much in them that was dazzling, but what would have become of Napoleon, if he had failed to force a decisive battle on the Austrians in Bohemia? Would the 150,000 men in the fortified camp on the Elbe have been capable of keeping the united forces of Bernadotte and Blücher long in check? So it is quite easy to understand that the Marshal failed to convince the Emperor, failed to shake his already fixed resolution. What, however, must strike us most now-a-days in the perusal of St. Cyr's memoirs is his correct appreciation of conditions in the northern scene of operations. One naturally asks—How did St. Cyr come by this surprisingly correct knowledge of the state of affairs, and really extraordinarily true estimation of the value of the Landwehr and Landsturm, and of the strength in numbers of the two armies? Had the Marshal other and better sources of information than the Emperor himself? Had he had the Emperor informed beforehand of what he knew and had his views already been taken into consideration in the preparation of the Emperor's plans, or had they only been deemed as the views of a subordinate General rendered pessimistic by the failure of many a well-laid plan and constantly inclined to exaggerated caution? A reply to these questions would be most interesting in tracing Napoleon's course of thought. Could it be proved that he had previously received reports upon the points raised by St. Cyr, that he had had explicit intelligence regarding the numerical strength of the Allies, the spirit of the people, the military value of the Landwehr, etc., then assuredly the frequent reproach would be justified that at this period of his career he had begun to lose his talent for objective judgment, and the inclination had grown more and more in him, to only view matters as he wished to have them.

Let us now see what Marmont's views were. He thus replied to the Emperor's despatches of the 12th and 13th in a letter, dated the 15th, from Bunzlau:—

"I reply at once to Your Majesty's despatches of the 12th and 13th, as you have directed, without reserve. I cordially agree in the leading principle that the campaign must be opened with a great battle. Without a victory at the very commencement, to give us power over the enemy, our advance will have been rendered insecure. The battle must be fought under your auspices, under your immediate command, from whatever side the enemy shows himself, and for this purpose the army, numerous as it is, must be concentrated as quickly as possible.

Accordingly Your Majesty will perceive that in my opinion we ought in no case to spread out so far as to Liegnitz. Your doubts regarding the advantages of a position, in which we should offer a flank to the enemy, if we should be strung out for eight marches along the Bohemian frontier, are too well founded to allow us to think of separating ourselves by such a distance from the Elbe. The same applies, in my opinion, to Bunzlau; Görlitz even ought only to be held by an advanced guard. I should propose that the whole army should be posted on the Spree and the Elbe and wait until the enemy is near enough to be overwhelmed. The concentration of the troops would make it possible for you to be present in person in case of any important occurrence, by which alone would victory be assured. I understand and share your impatience to capture Berlin; but this is not, I think, to be best attained by marching off straight upon that city. The fate of the campaign does not rest upon it; the capture of Berlin will be a consequence of battles fought elsewhere. If you insist upon undertaking the offensive in this direction at the very beginning of the campaign, you deprive yourself of a portion of your fighting strength, whilst the presence of a single army corps in front of Torgau and a few manœuvres from Hamburg or Magdeburg would suffice to neutralize the Prussian Army which is covering Berlin. When you have won a great battle on the Elbe or on the Spree, you can make any extraordinary movements you wish, and the march upon Berlin will be certain of success. If you feel you cannot wait so long for all this, I should far prefer to attack Bohemia direct. The troops in Silesia could concentrate on the Neisse to cover any movement by Peterswalde, draw closer to the Elbe, if the enemy marches upon them, and, lastly, conform to the general movement or force their way directly into Bohemia by the Zittau defile. A victory in Bohemia would have incalculable results and put you in possession of a country, which could afford you plentiful supplies and might perhaps be detached from Austria. Then Prussia would fall into your hands.

I have not personally seen the defensive works at Dresden; but from all I have heard I fear that Your Majesty is mistaken as to their actual strength and capacity for resistance. Nevertheless they figure largely in Your Majesty's plans. Of all projects I hold it best to let the enemy come on, and then offer him battle, and if he is defeated, to act on a general offensive according to circumstances, for it is to be borne in mind that the French Army is in a far superior position for combined movements in comparison with the enemy, because the former is in a central position in open country, while the various portions of the latter describe a widely extended arc and are separated by mountains. In short, I must repeat to Your Majesty that by dividing your forces into three different, widely separated armies, you will renounce the advantage, which your own presence on the field ensures, and I very much fear that on the day on which you will think you have gained a victory and have won a decisive battle, you will hear that you have lost two battles elsewhere."

If we examine Marmont's view critically, we must acknowledge that the Marshal had a very clear idea of the situation. He, like

St. Cyr, is a decided opponent of the attack upon Berlin and believes that the allied troops in North Germany could be kept inactive by Davout and Girard and a corps at Torgau. He wants the whole army concentrated on the Spree, somewhere near Bautzen, there to await the enemy's advance and beat him decisively in a pitched battle. He lays very great importance on the personal presence of the Emperor in case of any serious action, because as he has expressed himself elsewhere in his memoirs, in his opinion Napoleon was the only man capable of commanding an army, with his Marshals as Chiefs of Corps under his direction. A comparison of Marmont's proposals with the resolutions taken by the Emperor shows that the difference between the two lay almost exclusively in the rejection of the offensive movement against Berlin. If the Emperor abandoned this part of his plan, there was no longer any reason to push troops far out to the Bober, and they could very well be withdrawn to Görlitz or Bautzen, as had been originally the Emperor's intention. (Compare this despatch of the 12th August.)

We cannot, therefore, withhold our approval of Marmont's proposals. They do not indeed betray the bold spirit of the Emperor, which in firm belief in the superiority of the French arms and in the proud self-reliance of a great Commander held that the advantage of numerical superiority could be waived, but we cannot deny that the general position of affairs with Napoleon, the strength of his foes, the interior deficiencies of the French Army and the high stakes at issue, demanded extreme prudence in the conduct of the war, and that the Marshal was right, when, considering the youth and inexperience of the troops and want of discipline among the Marshals, he described the electrifying and restraining presence of the Emperor at all decisive points as an indispensable condition of success. Although it is impossible to say with certainty how matters might have developed, if Marmont's proposals had been put into execution, yet it is safe to assume that in that case the defeats, which he had prophetically foretold, might have been avoided at Gross-beeren and on the Katzbach, and that the victory at Dresden might have led to the overwhelming defeat of the main army of the Allies. As matters stood, their acceptance was no longer possible, even if Napoleon wished, for, by the time the Emperor had received Marmont's despatches, the die was cast and the course of events could no longer be interrupted.

We have come to the end of our critical reflections. As we glance at them once more and summarize their results, we see that the Emperor's decisions sprang from motives, whose logic we must wonderingly admit, that at every turn they reflect the spirit of audacity and energy which distinguished the conduct of his most successful campaigns, that they however rested upon a chain of assumptions which did not completely correspond with reality, upon a view of persons and circumstances, which as the war went on proved to be only partially correct. Does this afford us grounds for finding fault with the great Soldier's conception of the position and the measures he adopted? Hardly. "The foundations of the whole of a Com-

Hannibal or Cæsar concern themselves for their lines of retreat when the moment came to fight for the mastery of the world?"? as to the correctness or incorrectness of strategical decisions, says Moltke, in most cases the result alone can decide. The campaign of 1813 certainly turned out ill for the Emperor, but its course showed that it was neither the threatening nor the rupture of his communications with France which produced that result.

Let us take the line of the Elbe as the accepted base of operations and pursue our enquiry further.

The question now before Napoleon was whether to take an offensive or a defensive rôle in the war. We have traced the reasoning and the grounds which determined him upon the strategical decision. To appreciate this properly, we must bear in mind that he must have assumed the Russo-Prussian main army to be in Silesia. This being so, an offensive rôle against the main army of his enemies—that is to say, against the point at which the critical fight must be fought out, was impossible under the circumstances and on the grounds named above. To wait therefore and see what the enemy would do, to let him come on, was the only thing to do. The grouping of the forces in Silesia and Saxony can only be explained on the same grounds,—a allowed of making front in one direction and of opposing every probable point of attack with about equal forces.

In regard to this, critics, taking a very false view of the situation, have often blamed the Emperor by pointing out "how the grouping of his forces proves that he kept in view a march of the Austrians into Silesia, and not of the Russians and Prussians from Saxony into Bohemia in spite of the military and political point of gravity being necessarily where the main army and headquarters of the enemy were, and although a great victory energetically followed up would have ended the war surely and quickly." This reasoning is unjustified. The critic who assumes that Napoleon should have sought for the military point of gravity in Bohemia at the time when he must have had to take his final decisions, is ignorant of the position in which the Emperor actually was, but for a moment of later knowledge, allowing of a view of affairs, which Napoleon could not possibly have had at the time. Napoleon's resolutions must have been taken, in essence, during the last days of the truce, that is, about the 10th August, since otherwise he could not have had time to post his troops in their various positions. On the 10th August there were only the Austrian Army, which the Emperor fairly regarded as his least dangerous adversary in Bohemia, and whose strength he calculated at 100,000 men, while the Russo-Prussian Army, reckoned as 250,000 strong, were in Saxony and Silesia. How then could Napoleon have expected to find the military centre of gravity in Bohemia? How could he have expected that on the 11th 120,000 Russians and Prussians would come and move over into Bohemia and take over the whole position of affairs? We must therefore not too severely regard the Emperor as having been

but judging from Napoleon's character and the spirit in which he had hitherto always acted, are even constrained to assume that, on hearing of this flank march of the Allies, he would not have lost a moment in changing his base of operations to South Germany and in seizing the offensive against the new main army of his opponents. His position would have become simpler, because clearer; he might well have entertained hopes of bringing off a decisive action, which he had always regarded as the one solution of a difficult situation, and he would at last have an objective to operate against, whose annihilation must have in any circumstances brought him peace with favourable conditions.

Thus was the Emperor for the first time in the course of his life forced by circumstances to hold himself on the defensive, and to suffer being dictated to by his enemies. We have already pointed out above how greatly this form of action was opposed to the impatient nature of the man, how loudly the whole state of affairs in the French Army demanded a decisive battle; we shall therefore find it psychologically intelligible that he should endeavour to take the offensive with, at all events, a portion of his forces. He, skilled connoisseur that he was of the French national character, felt too that it was necessary for the tranquillization of public opinion and for the re-establishment of popular regard in France, to say nothing of the half rebellious States of the Confederation, to quickly win a dazzling victory. These considerations all beckoned him, he thought, towards the northern theatre of war. Accordingly he determined to break off with 70,000 men and act vigorously on the offensive in the direction of Berlin.

In judging this decision of his, we have to propound two questions: Was the offensive, undertaken with a portion only of his forces, justified under existing circumstances? Was the direction of his attack correctly chosen?

To the first question the answer must be: No.

From the various despatches written by the Emperor at this time it is clearly and distinctly manifest that he was expecting an attack by the Russo-Prussian Army from the direction of Silesia upon Dresden, combined with a flank attack by the Austrian Army by way of Gabel-Zittau. He had been convinced that this was their intention not only from the definite reports made by his agents in Vienna of the plans of the Allies proceeding from that city, but also because he considered that this operation on the part of his enemy would be attended with the greatest danger to himself, and because without doubt he would have acted so in their place. He reckoned the strength of the two hostile armies at 300,000 men. If he now detached so considerable a force from his own army (70,000 men) and contented himself with placing opposite the 300,000 only an equal number, he at once renounced one of the chief factors of victory—numerical superiority. So here again he set himself in opposition to his past, for surely it was he, who had introduced into the modern science of war numerical superiority as a main factor

of victory, of which the wars of the 18th century knew nothing. "The Science of War," he had said, "consists of having when attacking an army in inferior strength superior forces at the point at which one attacks or is attacked." "If one wants to fight a battle, the rule is to concentrate all one's forces. A single battalion often makes all the difference in the fate of a day"; he said in another place

* * * * All theorists in fact are agreed in requiring a concentration of force against the principal forces of the enemy. This fundamental rule is indeed so simple and obvious that it needs no comment upon it has not been wanting. It has been pointed out that it is very easy to wish to throw concentrated forces upon the critical point, but that the art really consists in correctly discerning this point. This is quite right. But in the case before us not the least doubt could prevail. The principal enemy was the principal army, that of the Russians and Prussians; against these alone could a victory be won that would decide the general issue of the war. All successes on the neighbouring theatres of war, great and daring as they might be, could weigh but little in the scale. While the principal hostile army were decisively defeated, victories elsewhere would only be a matter of time; they must fall of themselves, like ripe fruit, into the lap of the conqueror.

We can therefore only stigmatize the adoption of the offensive with a portion of the army as a great mistake. It weakened the French forces at the very point, at which they had necessarily to meet with the greatest numbers of the enemy, to say nothing of the fact that Napoleon's calculation of the strength of the Allies rested only upon irresponsible reports, and surprises awaited him in this regard as well.

The second question is of far less importance, namely, in which direction the attack should have been directed, whether against the Crown Prince of Sweden or against the Austrian Army. Both offered fair prospects of success, as has been shown above, and since 1813 the question, which was preferable, has been a standing argument in military literature. Taking the whole position of affairs, perhaps the offensive against the Northern Army seems the course the more likely to have led quickly to great success, as well as to have been the less hazardous, since Magdeburg and Wittenberg always entered the line of retreat. "It is easy", as Count Yorck very rightly says, "to criticize the offensive operations in the Mark of Brandenburg with pre-knowledge of the later defeats at Gross-Beeren and Lützenwitz, yet, whilst it must be said that the latter could not have been foreseen, the Emperor was, on the whole, clearly justified in expecting a different result." Assuredly, in order to bring about a different result, it would have been necessary to judge of the conditions prevailing in the northern theatre of war with less prejudice than Napoleon showed. He certainly judged the Commander of the Northern Army, his old comrade in arms, Bernadotte, correctly and would hardly be possible to characterize that General's behaviour throughout the campaign better than in Napoleon's contemptuous words—"il ne fera que paffer", while the Emperor could hardly have

forescen that the Crown Prince's subordinate leaders would break down all the barriers of the military hierarchy, accept battles against their superior officer's wishes, and carry them through to victory. But there was no excuse for his having appointed to lead the troops detailed against the Crown Prince, a man, who, though personally pre-eminently brave, was so totally incapable of the independent command of an army, as Marshal Oudinot; nor for not having better acquainted himself with the numerical strength of the Allies; nor for having so little conception of the spirit pervading the whole of Prussia and her army and in consequence for having unpardonably under-rated the military value of the Landwehr troops. This is all the more surprising in the "Great Son of the Great Revolution," since he indeed both at the opening of his military career and latterly again in Spain had had opportunity enough to observe, of what such a militia was capable, when it fought for all that men hold most sacred and most dear, for freedom and the independence of their native land, for national honour and their own royal house.

It is certain that Napoleon's decisions were based upon a very deficient knowledge of circumstances in the allied armies, and that especially with regard to their numerical strength he went on totally false conclusions. Clausewitz remarks that—"The Commander, who is compelled to base his decisions upon given facts without possibility of knowing whether they are correct or not, is exposed continually to the danger of errors, but is held excused. He can only be blamed, if it is proved that others in a like position and dependent upon equally deficient material have arrived at better, more correct conclusions."

In his despatch of the 12th August the Emperor demanded of Marshals Ney, Macdonald, St. Cyr and Marmont a free expression of their opinions upon the plan of operations he had imparted to them. It is of the highest interest to learn what these opinions were, because they sprang from a knowledge of the general situation very similar to that of the Emperor.

The replies came in from the Marshals in the course of the next day or two. Ney and Macdonald said that they could only approve of the Emperor's views and were convinced that the campaign about to open would be a fresh source of honour and glory for themselves and the French Army. No particular value is to be put on this answer. Doubtless Marshals Ney and Macdonald were two of the most brilliant personages who figured in the First Empire, whilst they were favourites even with Germans by reason of their bravery and often exhibited chivalrous feeling. But at a time of general turmoil, tossed by the waves of fortune within the course of a few years to the highest posts in the military hierarchy, half educated as they were and without compensatory talents, they had had neither the time nor the capacity to systematize their rich experience of war and to raise themselves thereby to independent views and judgment in strategical questions. Talent and routine had made them, as they had Oudinot, able Corps Commanders, but few opportunities had fallen to them on the one hand for the independent consideration of ways and means,

and action in the Emperor's own person, in spite of his great genius, could not fail to have its disadvantages. It is obvious that not many were Generals produced ready to accept responsibility, and the defeats which the Marshals, thrown more than usually upon their own resources, suffered in this campaign are directly traceable to the Napoleonic system.

To turn now to the details of Napoleon's plans. A number of critics have found fault with the choice by the Emperor of the Elbe as a base of operations, and because he did not retire behind the line of the Rhine or at all events of the Saale. The reasons advanced for the former view are hardly worth taking seriously. There was no necessity whatever for retreating so far, while to have done so would have been an unparalleled acknowledgment of moral defeat, would have summoned all Europe in arms to the frontiers of France, and would have left the fate of the Rhenish Confederation, Holland, Switzerland and Italy to the mercy of the Allies; it would have been preferable to accept all the conditions of peace they had offered. The object of the struggle was for Napoleon the attainment of peace on as favourable terms as possible. If, however, he was unable to obtain peace, favourable from his point of view, after a victorious advance to the banks of the Oder, one can easily calculate what kind of peace would have been granted him after a voluntary retirement back to the Rhine. Besides, as Jomini justly shows, Napoleon's forces would by no means have sufficed to guard the line of the Rhine from Basel to Amsterdam, the less so, as he would have been forced to leave a large proportion of his army as garrisons of numerous fortresses. "Instead of shutting up 150,000 men in fortresses and putting France under contribution, we kept all these forces active, reinforced them from the Rhenish contingents and carried on the war far from our own territory."

A retirement to behind the Saale would have given Napoleon the advantage of not having his base line flanked by the salient angle of Bohemian territory; but the Saale is not a river-barrier like the Elbe, and Napoleon would have foregone all the advantages which the possession of the numerous Elbe fortresses and crossing places assured him. The flanking of the Elbe line, upon which the Allied Generals in the spirit of the time laid so much stress, gave Napoleon no uneasiness. In his eminently practical view he thought little of strategical disadvantages in regard to the general position, and was even of opinion that every such disadvantage could be easily counterbalanced by tactical successes in the field. Above all things, tactical victory was what he sought for, and he judged a position by the possibility of gaining tactical success. It was therefore all the same to him, whether, as rumour went, the Austrians should take the offensive in the direction of Munich, fall upon the States of the Rhine, and cut his communications with the Rhine and France. For any such extensive operations time would be needed, and successes which might be within the bounds of possibility for his enemies in the course of weeks could be rendered impossible by immediate victories at

their inception. If the Austrian Army should turn on South Germany, it would be absent from the scene of the decisive battle fought in Saxony or Silesia. The temporary interruption of his communications with France had no danger for Napoleon; he could dispense with the inconvenience for some time, and they would be restored again as soon as the Russo-Prussian Army in Silesia had been defeated. Besides which the Allied Forces operating in South Germany would run precisely the same danger as the French Army did of having its communications with its base cut off.

It is no easy matter to attempt to criticize a master of war like Napoleon. One can but point out that the run of his reasoning, as we have sketched it in the preceding paragraph, does not correspond with the standard, methodical conduct of war. As Napoleon himself had said: "Every well-conducted campaign is a methodically conducted campaign," and, as he wrote to his brother, the King of Spain, in 1808: "The art of war is an art, which has principles, which it is never permissible to violate." The security of the rear communications against interruption and threat of danger from the enemy he reckons in the first line of these fundamental principles, and elsewhere he describes this principle as the A B C of the art of war. Napoleon therefore here, in laying no importance on the outflanking of his base and in declaring his indifference with regard to the rupture of his communications with the Rhine and France, set himself in direct opposition with the very principles, which at other times, he had pronounced to be fundamental and determinative. To act methodically, according to his own rules, Napoleon would have had to confess that the line of the Elbe was only to be preferred as a base of operations as long as he had Russia and Prussia alone to deal with, but that after Austria had declared against him and the theatre of war had in consequence widened, extending from the shores of the Baltic to the coast of the Adriatic, he ought to have selected a base much further south so as to set the French Army almost or quite in the centre of the great war to be expected. Then an interruption of his communications with France need not have been feared. However, the Emperor was, on the other hand, undoubtedly right, when, in the conviction that success depended on co-operation between his various forces rather than on the schematic application of hard and fast rules, he set himself above doubt and scruple and rule, and assumed that a temporary interruption of his rearward communications would be immediately relieved by a victory won in Saxony. Yet involuntarily the question rises: How if the battle went against him? If then the Austrian Army lay on his line of retreat with 125,000 men, a situation, very like that on the Beresina, might easily develop.

Suppositions and deductions of this kind were foreign to Napoleon's character. Quite different motives weighed the scale for him. In the campaign of the spring of the year he had reconquered Germany up to the Oder, and his high spirit forbade him now to yield even a foot-breadth without compulsion. "Did Alexander,

Hannibal or Cæsar concern themselves for their lines of retreat, when the moment came to fight for the mastery of the world" ? as to the correctness or incorrectness of strategical decisions, says Moltke, in most cases the result alone can decide. The campaign of 1813 certainly turned out ill for the Emperor, but its course showed that it was neither the threatening nor the rupture of his communications with France which produced that result.

Let us take the line of the Elbe as the accepted base of operations and pursue our enquiries further.

The question now before Napoleon was whether to take an offensive or a defensive rôle in the war. We have traced the reasoning and the grounds which determined him upon the strategic defensive. To appreciate this properly, we must bear in mind that he must have assumed the Russo-Prussian main army to be in Silesia. This being so, an offensive rôle against the main army of his enemies, that is to say, against the point at which the critical fight must be fought out, was impossible under the circumstances and on the grounds named above. To wait therefore and see what this main army would do, to let him come on, was the only thing to do. The grouping of the forces in Silesia and Saxony can only be approved on the same grounds,—it allowed of making front in any direction and of opposing every probable point of attack with at least equal forces.

In regard to this, critics, taking a very false view of the situation, have often blamed the Emperor by pointing out "how the grouping of his forces proves that he kept in view a march of the Austrian Army into Silesia, and not of the Russians and Prussians from Silesia into Bohemia in spite of the military and political point of gravity being necessarily where the main army and head-quarters of the three Monarchs were, and although a great victory energetically followed up would have ended the war surely and quickly." This reproach is unjustified. The critic who assumes that Napoleon should have sought for the military point of gravity in Bohemia at the time, when he must have had to take his final resolutions, judges not from the position in which the Emperor actually was, but from a standpoint of later knowledge allowing of a view of affairs, which Napoleon could not possibly have had at the time. Napoleon's resolutions must have been taken, in outline, during the last days of the truce, that is, about the 10th August, since otherwise he could not have had time to post his troops in their various positions. On the 10th August there were only the Austrian Army, which the Emperor fairly regarded as his least dangerous adversary, in Bohemia, and whose strength he calculated at 100,000 men, whilst the Russo-Prussian Army, reckoned as 200,000 strong, were in Silesia. How then could Napoleon have expected to find the military centre of gravity in Bohemia? How could he foresee that on the 11th 120,000 Russians and Prussians would quietly move over into Bohemia and thus alter the whole position of affairs? We must therefore not merely regard the reproach as unjustified

but judging from Napoleon's character and the spirit in which he had hitherto always acted, are even constrained to assume that, on hearing of this flank march of the Allies, he would not have lost a moment in changing his base of operations to South Germany and in seizing the offensive against the new main army of his opponents. His position would have become simpler, because clearer; he might well have entertained hopes of bringing off a decisive action, which he had always regarded as the one solution of a difficult situation, and he would at last have an objective to operate against, whose annihilation must have in any circumstances brought him peace with favourable conditions.

Thus was the Emperor for the first time in the course of his life forced by circumstances to hold himself on the defensive, and to suffer being dictated to by his enemies. We have already pointed out above how greatly this form of action was opposed to the impatient nature of the man, how loudly the whole state of affairs in the French Army demanded a decisive battle; we shall therefore find it psychologically intelligible that he should endeavour to take the offensive with, at all events, a portion of his forces. He, skilled connoisseur that he was of the French national character, felt too that it was necessary for the tranquillization of public opinion and for the re-establishment of popular regard in France, to say nothing of the half rebellious States of the Confederation, to quickly win a dazzling victory. These considerations all beckoned him, he thought, towards the northern theatre of war. Accordingly he determined to break off with 70,000 men and act vigorously on the offensive in the direction of Berlin.

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foreseen that the Crown Prince's subordinate leaders would break down all the barriers of the military hierarchy, accept battles against their superior officer's wishes, and carry them through to victory. But there was no excuse for his having appointed to lead the troops detailed against the Crown Prince, a man, who, though personally pre-eminently brave, was so totally incapable of the independent command of an army, as Marshal Oudinot; nor for not having better acquainted himself with the numerical strength of the Allies; nor for having so little conception of the spirit pervading the whole of Prussia and her army and in consequence for having unpardonably under-rated the military value of the Landwehr troops. This is all the more surprising in the "Great Son of the Great Revolution," since he indeed both at the opening of his military career and latterly again in Spain had had opportunity enough to observe, of what such a militia was capable, when it fought for all that men hold most sacred and most dear, for freedom and the independence of their native land, for national honour and their own royal house.

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and on the other they had had no help from Napoleon to guide them towards the habit of adopting independent opinions. Neither therefore were very capable of offering opinions of any value upon the tangled conditions of an extensive theatre of war.

It was otherwise with Marshals St. Cyr and Marmont. Both of these men were well equipped in education, training and intelligence, had often held independent commands and added to a large war experience sound theoretical knowledge. Their opinions therefore are of interest and value.

Gouvion St. Cyr on the morning of the 13th August had a long interview with the Emperor, when he freely explained his own views. He pointed out to the Emperor that, judging by the positions in which he had placed the various groups of the army, he seemed to assume that the Austrians would advance by the Gabel-Zittau road, whereas in his (St. Cyr's) opinion, they would in far greater likelihood operate on the left bank of the Elbe. He deemed it hazardous, too, to assume the offensive at different, widely separated points and to advance a large force towards Berlin, while the intention was simultaneously to fight a decisive battle in Silesia or on the Bohemian frontier. In his opinion it would have been advisable to remain on the defensive on the whole line of the Elbe, to concentrate some 150,000 men on the left bank of that river in a good position for defence between Magdeburg and Dresden, and to attack Bohemia energetically with the main body of the army. Disowning the intention of belittling the importance of capturing Berlin, he nevertheless considered that that ought not to be the primary object of attack: "The difficulties of an advance against Berlin would be far more considerable than the Emperor seemed to believe; besides, with the Prussians and Swedes, the new formed levies of the Landwehr and Landsturm had to be dealt with, which were not altogether as contemptible as the Emperor thought; Bernadotte's forces would certainly prove in superior strength to those detailed for the attack on Berlin; Berlin was very well able to offer serious resistance, while the enthusiasm for the war, which pervaded all Prussia, was a motive force that deserved serious consideration." In array against these cogent objections to operations against Berlin, St. Cyr. set the reasons for preferring an adoption of his own plan in eloquent terms: "If the Emperor would concentrate 150,000 men between Magdeburg and Dresden, his depôts and magazines would be covered from any hostile attempt, his communications with France would remain secure, and he could turn his undivided attention upon Austria. Without the assistance of her Allies, Austria could not save her States from the French invasion, and this assistance would probably not come before the decisive blows had fallen. Prague would be the pivot of his operations in Bohemia. On the upper Elbe and on the left bank of the Moldau he would find favourable positions, should circumstances compel him to temporarily yield the offensive. He would bring himself into close touch with the Bavarian Army, which was being formed on the Austrian frontier and would thereby confirm anew the closeness of the alliance with Bavaria. Finally, he would relieve his ally, Saxony, already more than

half ruined by the war, of the hardships of a campaign and would impose them upon a hostile and not yet exhausted country."

Summarized St. Cyr's plan amounted to this,—the complete abandonment of an attack on the Northern Army, the evacuation of the theatre of war east of the Elbe, posting an army of 150,000 men on the left bank of the Elbe, an attack on Bohemia with 250,000 men. It seems superfluous to look closer into this plan; it was one like any other, which might succeed and might as easily fail. The pros and cons regarding an attack on Bohemia had certainly been weighed by Napoleon. There was no doubt that St. Cyr's plans had much in them that was dazzling, but what would have become of Napoleon, if he had failed to force a decisive battle on the Austrians in Bohemia? Would the 150,000 men in the fortified camp on the Elbe have been capable of keeping the united forces of Bernadotte and Blücher long in check? So it is quite easy to understand that the Marshal failed to convince the Emperor, failed to shake his already fixed resolution. What, however, must strike us most now-a-days in the perusal of St. Cyr's memoirs is his correct appreciation of conditions in the northern scene of operations. One naturally asks—How did St. Cyr come by this surprisingly correct knowledge of the state of affairs, and really extraordinarily true estimation of the value of the Landwehr and Landsturm, and of the strength in numbers of the two armies? Had the Marshal other and better sources of information than the Emperor himself? Had he had the Emperor informed beforehand of what he knew and had his views already been taken into consideration in the preparation of the Emperor's plans, or had they only been deemed as the views of a subordinate General rendered pessimistic by the failure of many a well-laid plan and constantly inclined to exaggerated caution? A reply to these questions would be most interesting in tracing Napoleon's course of thought. Could it be proved that he had previously received reports upon the points raised by St. Cyr, that he had had explicit intelligence regarding the numerical strength of the Allies, the spirit of the people, the military value of the Landwehr, etc., then assuredly the frequent reproach would be justified that at this period of his career he had begun to lose his talent for objective judgment, and the inclination had grown more and more in him, to only view matters as he wished to have them.

Let us now see what Marmont's views were. He thus replied to the Emperor's despatches of the 12th and 13th in a letter, dated the 15th, from Bunzlau:—

"I reply at once to Your Majesty's despatches of the 12th and 13th, as you have directed, without reserve. I cordially agree in the leading principle that the campaign must be opened with a great battle. Without a victory at the very commencement, to give us power over the enemy, our advance will have been rendered insecure. The battle must be fought under your auspices, under your immediate command, from whatever side the enemy shows himself, and for this purpose the army, numerous as it is, must be concentrated as quickly as possible.

Accordingly Your Majesty will perceive that in my opinion we ought in no case to spread out so far as to Liegnitz. Your doubts regarding the advantages of a position, in which we should offer a flank to the enemy, if we should be strung out for eight marches along the Bohemian frontier, are too well founded to allow us to think of separating ourselves by such a distance from the Elbe. The same applies, in my opinion, to Bunzlau; Görlitz even ought only to be held by an advanced guard. I should propose that the whole army should be posted on the Spree and the Elbe and wait until the enemy is near enough to be overwhelmed. The concentration of the troops would make it possible for you to be present in person in case of any important occurrence, by which alone would victory be assured. I understand and share your impatience to capture Berlin; but this is not, I think, to be best attained by marching off straight upon that city. The fate of the campaign does not rest upon it; the capture of Berlin will be a consequence of battles fought elsewhere. If you insist upon undertaking the offensive in this direction at the very beginning of the campaign, you deprive yourself of a portion of your fighting strength, whilst the presence of a single army corps in front of Torgau and a few manoeuvres from Hamburg or Magdeburg would suffice to neutralize the Prussian Army which is covering Berlin. When you have won a great battle on the Elbe or on the Spree, you can make any extraordinary movements you wish, and the march upon Berlin will be certain of success. If you feel you cannot wait so long for all this, I should far prefer to attack Bohemia direct. The troops in Silesia could concentrate on the Neisse to cover any movement by Peterswalde, draw closer to the Elbe, if the enemy marches upon them, and, lastly, conform to the general movement or force their way directly into Bohemia by the Zittau defile. A victory in Bohemia would have incalculable results and put you in possession of a country, which could afford you plentiful supplies and might perhaps be detached from Austria. Then Prussia would fall into your hands.

I have not personally seen the defensive works at Dresden; but from all I have heard I fear that Your Majesty is mistaken as to their actual strength and capacity for resistance. Nevertheless they figure largely in Your Majesty's plans. Of all projects I hold it best to let the enemy come on, and then offer him battle, and if he is defeated, to act on a general offensive according to circumstances, for it is to be borne in mind that the French Army is in a far superior position for combined movements in comparison with the enemy, because the former is in a central position in open country, while the various portions of the latter describe a widely extended arc and are separated by mountains. In short, I must repeat to Your Majesty that by dividing your forces into three different, widely separated armies, you will renounce the advantage, which your own presence on the field ensures, and I very much fear that on the day on which you will think you have gained a victory and have won a decisive battle, you will hear that you have lost two battles elsewhere."

If we examine Marmont's view critically, we must acknowledge that the Marshal had a very clear idea of the situation. He, like

St. Cyr, is a decided opponent of the attack upon Berlin and believes that the allied troops in North Germany could be kept inactive by Davout and Girard and a corps at Torgau. He wants the whole army concentrated on the Spree, somewhere near Bautzen, there to await the enemy's advance and beat him decisively in a pitched battle. He lays very great importance on the personal presence of the Emperor in case of any serious action, because as he has expressed himself elsewhere in his memoirs, in his opinion Napoleon was the only man capable of commanding an army, with his Marshals as Chiefs of Corps under his direction. A comparison of Marmont's proposals with the resolutions taken by the Emperor shows that the difference between the two lay almost exclusively in the rejection of the offensive movement against Berlin. If the Emperor abandoned this part of his plan, there was no longer any reason to push troops far out to the Bober, and they could very well be withdrawn to Görlitz or Bautzen, as had been originally the Emperor's intention. (Compare this despatch of the 12th August.)

We cannot, therefore, withhold our approval of Marmont's proposals. They do not indeed betray the bold spirit of the Emperor, which in firm belief in the superiority of the French arms and in the proud self-reliance of a great Commander held that the advantage of numerical superiority could be waived, but we cannot deny that the general position of affairs with Napoleon, the strength of his foes, the interior deficiencies of the French Army and the high stakes at issue, demanded extreme prudence in the conduct of the war, and that the Marshal was right, when, considering the youth and inexperience of the troops and want of discipline among the Marshals, he described the electrifying and restraining presence of the Emperor at all decisive points as an indispensable condition of success. Although it is impossible to say with certainty how matters might have developed, if Marmont's proposals had been put into execution, yet it is safe to assume that in that case the defeats, which he had prophetically foretold, might have been avoided at Gross-beeren and on the Katzbach, and that the victory at Dresden might have led to the overwhelming defeat of the main army of the Allies. As matters stood, their acceptance was no longer possible, even if Napoleon wished, for, by the time the Emperor had received Marmont's despatches, the die was cast and the course of events could no longer be interrupted.

We have come to the end of our critical reflections. As we glance at them once more and summarize their results, we see that the Emperor's decisions sprang from motives, whose logic we must wonderingly admit, that at every turn they reflect the spirit of audacity and energy which distinguished the conduct of his most successful campaigns, that they however rested upon a chain of assumptions which did not completely correspond with reality, upon a view of persons and circumstances, which as the war went on proved to be only partially correct. Does this afford us grounds for finding fault with the great Soldier's conception of the position and the measures he adopted? Hardly. "The foundations of the whole of a Com-

mander's actions," says Clausewitz, "are based on the news he receives about the enemy. If we reflect on the nature of these foundations, we recognize from their untrustworthy and changeable character how dangerous is the edifice the Commander builds, how easily it can come tumbling down and bury its architect in the ruins." Napoleon therefore was justified in declaring to his friends on the evening of the 13th August: "I have calculated everything; the rest depends on Fate." Fate, however, was to decide against him to the welfare of Prussia, Germany, and indeed of all Europe.

NOTICE.

The sum of Rs. 500, allotted by the Council of the United Service Institution of India, as premia for articles contributed to the Journal during 1901, was distributed between the undermentioned officers :—

Lieut.-Colonel F. M. Rundall, D.S.O., Commanding
1-4th Gurkha Rifles.

Lieut.-Colonel G. P. Ranken, 46th Punjab Infantry.

Major T. E. Compton, Northamptonshire Regiment.

Major W. D. Thomson, 1st Bengal Lancers.

Major E. J. Medley, 17th Bengal Lancers.

Captain A. A. E. Campbell, 25th Punjab Infantry.

Captain W. C. Walton, 4th Bombay Rifles.

Captain R. G. Burton, 1st Infantry, Hyderabad Contingent.

Captain H. H. Dowding, Essex Regiment.

Captain W. B. James, 2nd Bengal Lancers.

C. B.

Captain H. H. F. Turner, 2nd Bengal Lancers.

Captain E. Dawson, Rangoon Volunteer Rifles (late
Sergeant, Lumsden's Horse).

Lieutenant F. P. P. Rouse, 1st Lancers, Hyderabad Contingent.

Prize Essay Gold Medallists.

- 1872.....ROBERTS, Lieut.-Col. F. S., V.C., C.B., R.A.
 1873.....COLQUHOUN, Capt. J. A. S., R.A.
 1874.....COLQUHOUN, Capt. J. A. S., R.A.
 1879.....ST. JOHN, Maj. O. B. C., R.E.
 1880.....BARROW, Lieut. E. G., S.C.
 1882.....MASON, Lieut. A. H., R.E.
 1883.....COLLEN, Maj. E. H. H., S.C.
 1884.....BARROW, Capt. E. G., S.C.
 1887.....YATE, Lieut. A. C., S.C.
 1888.....MAUDE, Capt. F. N., R.E.
 YOUNG, Maj. G. F., S.C. (specially awarded a silver medal).
 1889.....DUFF, Capt. B., S.C.
 1890.....MAGUIRE, Capt. C. M., S.C.
 1891.....CARDEW, Lieut. F. G., S.C.
 1893.....BULLOCK, Maj. G. M., Devonshire Regt.
 1894.....CARTER, Capt. F. C., Northumberland Fusiliers.
 1895.....NEVILLE, Lieut.-Col. J. P. C., S.C.
 1896.....BINGLEY, Capt. A. H., S.C.
 1897.....NAPIER, Capt. G. S. F., Oxfordshire L. I.
 1898.....MULLALY, Maj. H., R.E.
 CLAY, Capt. C. H., S.C. (specially awarded a silver medal).
 1899.....NEVILLE, Col. J. P. C., S.C.
 1900.....THUILLIER, Capt. H. F., R.E.
 LUBBOCK, Capt. G., R.E. (specially awarded a silver medal).
 1901.....RANKEN, Lieut.-Col. G. P., S.C.

MacGregor Memorial Silver Medallists.

- 1889.....BELL, Col. M. S., V.C., R.E. (specially awarded a gold medal).
 1890.....YOUNGHUSBAND, Capt. F. E., K. Dn. Gds.
 1891.....SAWYER, Maj. H. A., S.C.
 RAMZAN KHAN, Havildar, 3rd Sikhs.
 1892.....VAUGHAN, Capt. H. B., S.C.
 JAGGAT SINGH, Havildar, 19th P. I.
 1893.....BOWER, Capt. H., S.C. (specially awarded a gold medal).
 FAZALDAD KHAN, Dafadar, 17th B. L.
 1894.....O'SULLIVAN, Maj. G. H. W., R.E.
 MULL SINGH, Sowar, 6th B. C.
 1895.....DAVIES, Capt. H. R., Oxfordshire L. I.
 GUNGA DYAL SINGH, Havildar, 2nd Rajputs.
 1896.....COCKERILL, Lieut. G. K., S. C.
 GHULAM NABI, Private, Q. O. Corps of Guides.
 1897.....SWAYNE, Capt. E. J. E., S. C.
 SHAHZAD MIR, Dafadar, 11th B. L.
 1898.....WALKER, Capt. H. B., Duke of Cornwall's L. I.
 ADAM KHAN, Havildar, Guides Infantry.
 1899.....DOUGLAS, Capt. J. A., S. C.
 MIHR DIN, Naik, Bengal S. and M.
 1900.....WINGATE, Capt. A. W. S., S. C.
 GURDIT SINGH, Havildar, 45th Sikhs.
 1901.....BURTON, Major E. B., S. C.
 SUNDER SINGH, Colr. Havildar, 31st Burma Infantry.

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A RANKER OF OLD TIMES.

1797—1825.

BY CAPTAIN E. DAWSON, RANGOON VOLUNTEER RIFLES.

Students of the history of the British Army know that in its promotion from the ranks is not a thing of to-day, or even of yesterday. They are aware that at almost every period of the life of the Army as a permanent organisation it has been possible for Englishmen without money, high social rank, or patronage, to say nothing of that very modern requirement—education—to win their Sovereign's commission by means of their own valour and energy.

Still it is somewhat startling to find that the subject and author of these "Memoirs,"* himself the son of a private soldier, left an orphan in infancy, bred in a parish poor-house, and without a friend in the world, before he had reached the age of 31 had twice risen through the ranks to the status of an officer.

John Shipp was born at Saxmundham, in Suffolk, in 1784. His mother dying when he was three or four years old, and his father being on foreign service, John and his brother, four years older than himself, were taken charge of by the parish. At fourteen the elder of the two went to sea, and was no more heard of by our author. John was "put out" to a farmer, who treated him roughly. Apparently, however, it was not by way of escape from ill-treatment, but out of love of adventure, and especially of the military career, that at the age of thirteen he enlisted in the 22nd Foot, one of three regiments which, as an experiment, were ordered to make up their strength to a thousand rank and file by the enlistment of "Parish boys."

* Memoirs of the extraordinary military career of John Shipp, late a Lieutenant in His Majesty's 87th Regiment. Written by himself. Published by Mr. Tegg, London, 1843. New edition, London: T. Fisher Unwin,

Garbed completely in scarlet, and with the scant remnant of his curly hair soaped and greased by the barber into a pigtail, so tight that he could not shut his eyes, the youngster was passed into the band. He learned to play upon the triangle and the flute, and when the other lads annoyed him it was his custom to inflict "a good threshing." He amused himself exceedingly well, and shortly became fife-major, swaggering in silver epaulettes under the eyes of the girls of Colchester.

He was an insatiable reveller in life ; whether he twirled his cane at a guard-mounting, "threshed" a drummer-boy, saluted the colonel, or set a bobby-trap, he did it with a zest of his own, and the pleasure with which he recalls the memory of his early frolics (his taste in humour favouring the "practical") is only half-disguised. "My days" (he quaintly says) "were now comparatively cloudless; *yet still* my youthful tricks had not entirely left me." It was rather *because* his youth clung to him, *because* he was ever a boy at heart, unreflecting, happy in the action, whether work or play, of the moment, that he rattled along gaily through hardship, toil and peril, enjoying existence to the full. Even "the blackhole" to which he was sentenced for bartering his shoes for plum-duff, failed to lower his incorrigibly high spirits ; he must put in his time there in standing upon his head, walking on his hands, and turning summersaults.

After serving at Portsmouth and in Guernsey, Shipp's regiment was ordered to the Cape, and sailed in the *Surat Castle*, East Indiaman. The voyage, owing to scurvy, "ship fever" and overcrowding, was a catalogue of horrors, yet, as soon as the anchor was dropped in Simon's Bay, our sprightly youth was "jumping and dancing like a merry-andrew." Seventy-two men died on the trip.

We note in passing that while Shipp's regiment was at Wynburg a company of rifles, "dressed in green, and with pieces browned," was formed of picked men from various corps, and sent up-country to Graaf-Reinet, to stop the devastations of the Kaffirs "among the Dutch Boers."

In 1801, when the British Government, in one of its paroxysms of anti-Imperialist generosity, gave up the Cape to the Dutch, Shipp was sent to Capetown with a "Boer's" family, in charge of the officer's baggage. The waggons marched twenty miles a day, and the party reached Capetown safely, but Shipp, now a strapping youth of seventeen had lost his heart to the Dutchman's lovely daughter. While he remained in the army, to think of marriage was hopeless, he was tempted and resolved to desert. The Dutchman smiled upon his suit, while calmly proposing that they should steal the officer's baggage. On this point, however, Shipp was firm, and it was after duly delivering the property at its destination that he was arrested some thirty miles from Capetown, at the muzzle of the provost-marshal's pistol. A court-martial sentenced him to the monstrous punishment of 999 lashes, but the colonel, "a kind and affectionate man," remitted the sentence, "admonished me like a parent, painted the crime of desertion in all its enormities, and dismissed me with the assurance of his full forgiveness and friendship." The regiment now embarked

for India. The Dutch, exulting like savages in the supposed weakness of their whilom conquerors and recent protectors, crowded to the wharf to offer insults where they dared.

With a drunken captain and a foul and leaky vessel, the voyage to Calcutta occupied five months. Shipp, seeing in India a land of promise, began to think seriously of bettering his situation. His captain taught him to read and write, and in a year he was keeping the company accounts. He left the drums, and soon became a corporal in the light company. Promotion to sergeant and pay-sergeant followed in a few months. We get a glimpse of some of the queer regulations and customs which then obtained in the army, as when the sum of eight rupees was cut from each man's pay upon arrival at Fort William, without any explanation of its purpose. Upon finding that the stoppage was intended *to insure each man a decent burial*, the corps was ripe for mutiny, which was only avoided by the exercise of the personal influence of favourite officers, and the refund of the money.

The two flank companies marched 1,200 miles up-country to join the field army under Lord Lake against Holkar. The marches averaged 26 miles a day. Shipp says nothing about mounted infantry, but lets fall that he at least was now mounted, and that, too, upon "the fastest pony in India," called Apple. At this period he seems to have done pretty much as he liked, riding ahead of the column on the march, looting silks and shawls from "a rajah's palace" in which he was quartered at the captured town of Muttra, and generally having a good time. About the movements of the army, and geographical details generally, he is decidedly vague. Holkar retires to winter quarters "in a distant part of India" and the army returns to Cawnpore "to spend the produce of the short campaign." In this matter of the winter quarters, and entering upon campaigns in the spring, we seem to recognise the hand of the injudicious editor unfamiliar with the country.

Shipp received his first wound from a matchlock ball in the assault on Dieg on Christmas-eve, 1804. The storming party consisted of 700 men under Colonel Ball, who was so feeble from advanced age that he had to be pushed up the breach by his men. This place being captured, the army advanced to the siege of Bhurtpore, the attack upon which was to be one of the great events of Shipp's career. The fortress was of great strength, and apparently Lord Lake's strength, both in men and guns, was inadequate. Shipp volunteered to lead the forlorn hope, and his offer was accepted by Lord Lake, with a promise of a commission if he survived. It is not clear why it was necessary to entrust this important duty to a non-commissioned officer and that one probably the youngest in the army. The assault was unsuccessful, and the party was repulsed with loss. Shipp received a grapeshot and a spear wound, and his former wound in the head reopened. This was on the 9th January, 1805. On the 20th, however, he was again allowed to lead a storming-party for the second attack. Seven hundred of the British were killed and wounded on this occasion. Shipp received another matchlock ball in the head, and the attack

was again fruitless. On the 20th February, the day appointed for another attempt, the enemy made a sortie causing considerable loss. Not unnaturally the doctor forbade Shipp to take part in that night's attack, and upon this occasion the forlorn hope was led by Lieutenant Templar. There was another repulse. Next day, Shipp declared that he was well, and implored the doctors not to stand between him and glory. For the third time this heroic youngster was allowed the post of honour. The party marched to the breach, where lay the stripped and mutilated bodies of their comrades, some still living. The defenders were in complete armour, proof against the British bullets. Templar was cut to pieces; Shipp shot and hurled upon a bayonet, and badly scorched by the explosion of the contents of his pouch; once more the attack was repulsed with severe loss. The siege was raised, the four assaults having cost in killed and wounded some 3,000 men. The terms made with the enemy compelled them to pay the cost of the siege, but after the ratification of peace the soldiers were humiliated by seeing the garrison, who were allowed to visit the camp, flaunting the clothes and ornaments of the British dead.

In the next general orders, Shipp was appointed ensign in the 65th Regiment. He dined with the Commander-in-Chief, who was extremely kind, and next day gave him a horse, two camels, and tent, beside telling him to draw upon himself through the paymaster for what money he wanted. Three weeks later, Shipp was promoted to be Lieutenant in the 76th. Shortly afterwards he was sent to Calcutta with invalids, and then ordered home. With one of his artless attempts at an ornate style, he requests the reader to join him in "beating the silvery wave," his way of "going to sea." The convoy escaped the French fleet, and Shipp arrived in England in October, 1807. There he soon became involved in debt, to free himself from which he sold his commission. Without friends, a home or a profession, he was soon penniless, so he enlisted again, in the 24th Light Dragoons, sailing again for India (already a sergeant) on the 8th January 1808. The commanding officer was a severe and cruel man, and the cat was so continually in use that the captain of the ship had to protest that he could not have his deck converted into a slaughter-house.

Shipp reached Meerut on November 9th, 1809, and was well received by everyone. His promotion, however, was less rapid than before. He was made regimental sergeant-major in 1813, and the perquisites of this appointment and the subsidiary ones of "gaol-keeper, undertaker, and log-maker," whatever these latter may mean, brought his pay to a handsome amount. He became engaged to the daughter of a commissariat conductor, but before the wedding-day he was appointed ensign in the 87th Foot. The old conductor expected, as a matter of course, that the match would now be broken off. Shipp, however, firing off some rather Joseph surface-like sentiments, stoutly held to his bargain, only deferring the marriage until he should be settled with his regiment. He joined the 87th on the march; it formed part of the force proceeding to the invasion of Nepal under Ochterlony.

At Makwanpore (I occasionally take some liberties with Mr. Shipp's spelling of place-names) he engaged in single combat with a sirdar, whom he killed. After this campaign in April, 1816, he was married at Cawnpore.

The next active service of the regiment was at Hattrass. In his account of the siege of this place, Shipp makes some remarks about officers and their equipment, which seem worthy of notice, as showing the complete change that the lapse of ninety years has made in our ideas. In the portrait that forms the frontispiece of the volume, Shipp appears in the act of encouraging his men to the storm of a fortress. He wears a long dark frock-coat with standing collar, black stock, and shirt collar nearly up to his ears, long tight trousers of a lighter colour, sash round the waist, and white belt over it, with a pistol hanging in a loop, the stage pirate mode. He waves a sabre shaped like a sword-bayonet, and has, apparently, "thrown away the scabbard." A black pigtail droops gracefully on his right shoulder. His head gear is a tall black shako with metal ornaments, and an upright plume a foot high.

This, then, was the uniform in which the British infantry officer of the day marched and fought in India. Well, while preparing for the assault on Hattrass, "an officer had taken his epaulette from his shoulder, and his plate and feather off his cap, so that he looked for all the world like some discharged pensioner." This strange metamorphosis drew upon him the ridicule of his brother officers, and the scoffing of the soldiers. "*Whatever might be his motive*" (the italics are "mine) *for such an alteration in his dress, to say the least of it, it was extremely imprudent and improper*"; for, by such conduct, he incurred the animadversion of the soldiers of his own regiment, who would, in all probability, put the most illiberal construction on it. The officers did not fail to have their jokes and draw their conclusions from such a strange circumstance; and when the question was put to him, why he did such a thing, his answer confirmed the ill-natural surmises that had gone abroad, his avowed object being that the enemy should not know him from a private soldier of the regiment. How far such an expedient may have deserved censure, I leave the public to judge. I merely introduce the instance to warn other young officers against doing anything that may justify the animadversions of the soldiers, or bring them under the lash and ridicule (*sic*) of their brother officers. Whatever may have been the feelings of this young officer—and I should be sorry to impute his conduct to anything but thoughtlessness—I can venture to assert that he never re-established his former character: in consequence of which, he some time after left the regiment. Therefore, young soldier, never be ashamed to let your foe know that you hold His Majesty's commission. I would sooner cram it down their throats than have my honour or courage doubted." "Be tenacious of your character, more especially in the point of courage. If you trifle with this, the sooner you cut and run the better."

Ninety years pass—one long lifetime, and we find British officers in war robbed of all distinguishing marks by general orders, and carrying rifles instead of swords, while in our native regiments they are ordered to adopt the same head-dress as the men for the very same reason which Mr. Shipp thought so disgraceful and absurd. There can be no two opinions as to which of the two systems is the more rational and prudent, neither can there be any doubt which is the more dashing and chivalrous. Yet those are fools and blind who say there is less bravery among officers now than then. In our day a forlorn hope in an attack on a place like Bhurtpore would not be led by a sergeant while any officer lived, and no picture that we have of all-conquering valour excels the one of that officer of Highlanders in South Africa, blinded by a shot which destroyed both eyes, indomitably heading an attack, led by two of his men.

Shipp lost a finger at the taking of Hattras, but was consoled by getting some loot, including a Persian horse which he sold for Rs. 2,000. Captured towns in those days were not treated in the polite gentlemanly manner of our soldiers at Johannesburg, and both officers and men held campaigning a legitimate source of profit as well as glory. Perhaps the portentous military head-gear of the period was designed, after all, with some thought of utility, for Shipp says that a private of the company's foot artillery passed under the noses of the prize-agents with 500 gold-mohurs (sterling £ 1,000) in his cap!

The Marquis of Hastings appointed our friend divisional baggage-master in consideration of his being the only officer wounded at Hattras. His Lordship seems also to have been partly moved by Shipp's skilful impersonation of "Lord Duberley" in "the Heir-at-Law." As baggage-master he controlled the 80,000 camp-followers and 12,000 animals which accompanied the division of 8,000 men with such success that the Divisional Commander said that if he lived and commanded twenty armies, Shipp should be his baggage-master.

He took part in two campaigns against the Pindarees, and was at the taking of Asseerghur under Major-General Dweton.

In 1821 this adventurous and honourable military career came to an unfortunate end. Shipp had become a partner with a Lieutenant-Colonel Browne for racing business. He purchased horses in Calcutta, and events connected with this transaction, which he slurs over in his history, led to his being tried by court-martial for unofficer-like conduct in writing intemperate letters reflecting upon the character of Colonel Browne and other officers. He was convicted and sentenced to be "discharged" from the service. The court recommended him to mercy, and the Commander-in-Chief remitted the sentence on account of the previously high character of the accused, his gallantry and many wounds. He did not, however, recommend that Shipp should be retained in his regiment, and the confirmation finally received from England directed him to be placed on half-pay. The trial lasted 13 days and the proceedings covered 300 foolscap pages,

but these are omitted from the present edition of the memoirs. We are thus not enabled to judge accurately of the precise degree in which Shipp was to blame, but it would seem that in the original transactions which led to the court-martial there was nothing dishonourable to him.

He bowed to his fate with manly dignity, and in after-years admitted that his conduct in writing the fatal letters had been unjust and wrong.

His wife died in childbirth during the pendency of the case. He returned to England in 1825 in charge of a disorderly batch of invalids. Drunkenness, disease, and threatened mutiny among this turbulent crowd made the six-months' voyage terrible; more than forty deaths occurred. In October of that year he fell out from his last parade at Chatham. The East India Company gave him a pension of £ 50, and upon this he married again, and commenced as an author. His Memoirs had an immediate success, but two other works, a tale called "The Shepherdess of Arranville; or, Father and Daughter", and a two-act melodrama "The Maniac of the Pyrenees; or, the Heroic Soldier's Wife," were less encouragingly received. He also wrote "The Military Bijou," and a pamphlet on Flogging in the Army which made some stir, and procured the author a gift of £ 50 from Sir Francis Burdett, the Radical orator of the day. The Metropolitan Police Force was being organised, and Shipp was appointed an Inspector, afterwards becoming a Superintendent of Police at Liverpool. Here he again distinguished himself by his energy and courage. He died in 1834, Governor of Liverpool Work house.

AUSTRALIAN HELP FOR INDIA—VALUE OF HER MOUNT- ED INFANTRY.

BY G. C. CRAIG, YDNEY, AUTHOR OF FEDERAL DEFENCE OF
AUSTRALIA, ETC.

There are six reasons which prompt me to draw the attention of your readers to the above subject—(1) the continued advance of Russia towards Herat ; (2) her influence *per se* in Persia ; (3) her approaches over the two Pamirs ; (4) her recent presence in Tibet ; (5) her practical conquest of Manchuria and having strong fortifications at Port Arthur ; (6) the concentration of huge armies by land and sea, as also her powerful fleet in Chinese waters. Looking at the map we see that Russia menaces India and her positions from the Persian Gulf, across Central Asia to the Pamirs, and then over Tibet, Mongolia and Manchuria. Now this is a serious hostile barrier right round India, and holding those passes that lead to Burma, Nepal and Tibet, which also turns the flank of our position in China, and eventually India itself.

It may be true that the military resources of the Indian Government and loyal patriotism of the Indian princes and chiefs are quite sufficient to defeat any attempted Russian invasion. The King's subjects in India know well the blessings of peace and prosperity under the Union Jack, instead of the boasted spread eagles of Russia. In Australia we are all proud of our Indian fellow-subjects, excepting amongst a few labour members with weak and selfish ideas of legislation. We have admired their prowess on the Afghan frontiers. We gave your Indian troops when they visited Australia the warmest possible welcome. We cheered and felt proud of them as any Grenadier, Fusilier or Highlander. We shall never forget the grand intervals and magnificent martial march past before Lord Hopetown, in Sydney, and Lord Ranfurly, in New Zealand. They mixed with us when off duty with feelings of pride and unity that sprung up between the Indian troops and our colonial people. Our Australian naval brigade have come back from China, and the units speak in the highest terms of the Indian troops during the Pekin campaign.

The visit of Indian troops to Australia ended in both races knowing each other better, and it meant the stronger unity and *camaraderie* of Imperial empire. Whilst we Australasians will long remember them, I am sure that the Indian troops upon their return will make the bazaars and villages to vibrate with love and respect for us. They will also tell of the greatness of Sydney, Melbourne, Wellington and Dunedin—of Australian England beyond Bombay and

the Indian Ocean. Such events considered in the light of recent and concurrent doings in the political world will draw India and Australia nearer and dearer to each other. The advance of Russia upon Afghanistan and her aggression in China, together with the great stride of steam and electricity to reduce distance and the difficulties of transport, have made every phase of that advance an Australian as well as an Anglo-Indian question. Russia dominant in the Persian Gulf, or "somewhere east of" Hong-Kong strikes at our trade lines of communication, if not at our sea power of glorious naval memory and value. If the present Russian ambition succeeds, it means the weakening of the Imperial empire. India and Australia will object to that.

I am one of those who believe in having "forces in the right place, at the right time." Those who direct our Regular Home Army very seldom have their forces in such a desirable position *re* mobilisation and concentration. The Indian army however is seldom, or never, caught unready. It has a wonderful rapid mobility as seen in the Malakand and Tirah campaigns. Our regular army was caught unready, and in the wrong place at the right time; in fact there was no Moltke-like plan of campaign in South Africa. Sir Arch. Hunter said the very maps were unreliable, and the War Office was astounded at the extent of Boer preparations for war, as Lord Salisbury says "years before it finally broke out." But the Indian War Office can always see further ahead, and knows better the armed force of its foe, than the Horse Guards. It is a truism that sooner or later Russia will strike at India through Afghanistan, Persia and the Pamirs. The policy of all recent Viceroy's of India, and the work of Lords Napier and Roberts and Sir George S. White has been to meet "the storm that darkness the day" beyond the Khyber and Hindu Kush.

The cavalry, guns, transport and infantry brigades are all *ready* to meet the Cossack and Turkoman. The scheme to make a Sir John Cope of Kouropatkin exists upon more than paper at Simla. All may be quiet along the Hindu Kush to-night, but the electric button that will give life and cheer to all our advanced columns may be touched in the morning. Nations declare diplomatic peace one day, and declare war the next day. It is not likely that Russia will kindly inform us when she marches upon Herat, Chitral, or the Pamirs. We must and have anticipated such a probability on the part of our friends the Russian enemy. Like clockwork we should land in the Persian Gulf to cut the Russian lines of communication, whilst our army of Quetta would be *galloping* to Herat. The crossing of the Indian or Afghan-Merv border would also mean war in the Baltic, Black Sea and Persian Gulf. We take it also that France would join Russia in a war with England; and this would mean a tremendous naval war at home, and also in the Indian, Pacific and Australian seas. For some months all British land forces would be more or less isolated, whilst hostile fleets would be closely engaged in destroying commerce and struggling to maintain command of the seas.

In such a struggle to maintain empire, Australia would be anxious to send 10,000 Bushmen, as an Australian contingent, to help the Indian General Officer Commanding to defeat the King's enemies. Amongst those defiles and passes, where rapid movements and mobile operations are wanted at the right point, with a French, a Scobel, a Plumer, a de Lisle, a Hut'on, or a Sir Ian Hamilton to lead them; such a large mobile force of mounted Australian infantry, stout of heart, straight of aim, and enduring in the field should be a God-send to a "Bobs" Napier, or a "Eobs" Roberts. Most of them would land at Bombay (for orders) or at Bushire with a large South African experience, and profound knowledge of hilly warfare. Sir Edward Hutton and General A. B. Tulloch, late Commandants in Australia, both predicted what such a colonial force could do in the rear or front of a Russian army between Merv and Herat. At one time they both expected to be called upon to lead such a force to India. But Russia did not advance then. She contented herself by insulting British colonels, and murdering some Afghans in a Jamieson-like raid, before she was ready.

The Indian Government and army officers would gladly welcome such an addition to their armies upon active field service, without thinking that they were better than their own gallant officers and men. The spirit in which they could be sent would be appreciated upon both sides, and both forces would rush into battle with Sikh, Pathan, Gurkha, and Mahomedan with the light of dash, courage, and victory upon their faces. All would have one great object—the defeat and driving back of Russia to the Caspian, and the Oxus to near Samarcand. Such Australian operations would depend upon two things: a Persian alliance, and the safest command of the sea. Aforehand the transport of a large contingent from Australia before a declaration of war might be done, as the risk would be dangerous in the time of war owing to greyhound warships and "fleets in being" like that of Cervera, which kept Americans from sending troops to Cuba, a short distance from its southern ports. Fleets in being in the Indian Ocean would render an Australian expedition to India rather dangerous until the sea was safe.

Wolseley said of mounted infantry that an "army possessing such a force, and whose leaders know how to use and handle it, will have an enormous advantage over an army that adheres to the exclusive stereotyped employment of cavalry infantry and artillery." This has proved true of our war in South Africa. Infantry mounted have done much in the way of success, but much remains to be known of its true value in point of a highly disciplined Russian army in Asia. Sir Edward Hutton says that "Mounted infantry introduced an entirely new system of tactics, and brought to light principles of organisation and training that had been neglected or forgotten." Again he says: "the development of fire power, the introduction of smokeless powder, and the necessity of increased mobility have brought about a revolution in the tactics of mounted services, of which the American cavalry leaders of 1862-65 were the first practical exponents."

He also proves in the *Empire Review* what mounted infantry did in the Zulu, Boer war of 1881, and the Egyptian war of 1882. Owing to long-range fire and smokeless powder all scouting and patrolling must be performed by mounted infantry, backed up by an active cavalry well led by an intelligent general and staff.

The troops that we should send must be mounted infantry, taking with them their own horses—"walers"—for the Indian army has a large reserve of cavalry, artillery, and infantry for the purposes of battle tactics and shock action. Battle cannot be gained by mounted infantry alone. Long ranged guns and magazine rifles may have changed the art of direction and formation in the attack, but the primary and well-known rules of war never change, unless by some unusual circumstance suddenly developed, often by the blundering or non-blundering of some commanding genius, or further by the nature of the terrain so often seen in the Boer war. Special lessons can be derived from the Boer war, but we must not go too far in copying as we did after the Franco-German war. It will never do for us to fight the armies of Europe, outside the Tyrol Kloofs and Switzerland Kopjes, in Boer style. The opinions of Mr. Hales, after seeing the field manoeuvres of the French and German armies, will not be taken seriously by the 'cute and experienced soldier. Depend upon it that the drill, discipline and battle courage of the French, German and Russian armies are not to be despised, as they are great military organisations, difficult to beat in war-time.

We have in Australia the very type of mounted men required to hang upon the flank or rear, or "humbugging" the front of an army. Sir George Chesney said that 30,000 horsemen if properly handled, and fearless, could "entirely cripple and confound an army of 300,000 men." Well, we have seen in South Africa, a De Wet and Delarey confound a British column of 2,500 men, but the Black Prince at Agincourt bears out the opinion of Sir George Chesney. My Indian friends are only beginning to know the excellent fighting qualities and latent army strength of our commonwealth. Sir John Faucet has put it down at 924,000, so we can easily spare 10,000 men for India, without reducing our fighting strength in the event of invasion. Such a force can be sent to India, if India provides the smart staff officers for intelligent leading, as we have more V. C. men than Napiers in our Australian ranks. Our Boer war experiences have made our officers and non-commissioned officers better leaders than when that war broke out. A military college and camp of instruction will soon produce a crowd of smart leading, and good leading officers, ready for anything, or any where.

NOTES FROM THE TRANSVAAL.

BY MAJOR H. P. WALTON, SOUTH AFRICAN CONSTABULARY.

The following observations are in accordance, generally, with the views held by many officers of experience in South Africa.

A rough idea of an attack, now-a-days, is as follows:—Hold the enemy in front with Infantry in position, and, with mounted troops out-flank and threaten his rear. Get the enemy on the move, and having got him moving hurl all your forces at him, and never leave him; but avoid losing men by pushing Infantry against an enemy in position. Infantry should be used for holding ground, and for pressing home attacks, while mounted men should be used to seize positions rapidly, for flank movements, rear attacks, harassing operations, and scouting.

Infantry for scouting are nearly, if not quite, useless in South Africa. There are two phases of scouting. One in which the scouts are the feelers of a force on the move. The other in which they are independent bodies or individuals, gathering intelligence on their own account.

Both kinds of scouting require mounted men. Every mounted man should be a good scout, and should be trained as such; and any man who is willing to learn and is not an idiot should be able to learn the duties.

It is undesirable to have a special corps of scouts, or men specially selected as scouts from corps. The other men are apt to rely on such to do all the scouting, whereas it is necessary that every man should be able, when called on, to see and to report, because the special men may not be available just when you want them, or may get killed off.

Mounted Infantry should be as good as Cavalry and Cavalry should be as good as Mounted Infantry. Such remarks as that about the ponies which convey the men to their posts on the battlefield may be orthodox drill-book tactics for Mounted Infantry, but it is found, in practice, that mounted Infantry are as much Cavalry as Cavalry can be Cavalry in this war. So much so that the tactics of the two are indistinguishable. There is no distinction and you may "*pool the lot and call them what you please.*"

Every mounted man should carry a bayonet on his person, and a sword on his saddle. The sword should not be too weighty but a good thrusting weapon.

The shock tactics of cavalry may be more or less obsolete, but as a pursuing force, and sometimes when a charge is undertaken, nothing can make up for the want of a sword. It must be remembered that on many occasions, when the Boers have wanted to effect a surprise, or our men have been "sticky," but not in an ungetatable position, the Boers have charged us headlong, firing as they came along; and there are few instances in which these tactics have not resulted in complete success. When the Boers took our gun and gave us a "knock" at Vereeniging, they did it in this way. The other day a lot of Yeomanry were captured by the same method. It is recognised as one of their most effective tactics, and a special order has been issued as to how to meet such a move. Instances have been known in which our men have got right up against the Burgher, and the want of a sword, or some charging weapon, with which they might ride him down has been much felt. If it were possible to make every man a proficient in the use of the revolver, this would be a very useful weapon (the United States Cavalry are armed with the long barrellled Colt), but in unskilled hands it might do more injury to friends than to enemies.

The training of Cavalry and Mounted Infantry should be identically the same. Riding and shooting are the two most important essentials; and a thorough knowledge of the treatment and training of horses should be instilled into all by lectures and by practical instruction.

Horses should be trained to stand fire well when the reins are thrown over their heads, or when reins are dropped on the neck with the rider still seated. Men on horses should be trained to shoot out of the saddle at the halt, or on the move, individually, and in bodies charging in open order, firing as they advance. Men *must* be trained to shoot well on sight, up to 500 yards at least, judging distance and elevation without elevating the backsight. For mounted troops target practice at ordinary bulls'-eye targets should be wiped out as bad and obsolete. At the same time good individual shooting is an absolute necessity, to be attained less by formal drills, than by the use of individual intelligence and a thorough practical knowledge of the capacities of the rifle, to be inculcated by lectures, made interesting, and much field practice under service conditions. The new short rifle seems to be well suited for mounted troops, the long rifle being too unwieldy, and the carbine obsolete. The remarkably accurate shooting made by Boers at extreme ranges has doubtless been noted. Every attention should be paid to the lesson taught by it.

The old fashioned military riding seat should be no more seen, and with it should disappear that marvellous invention the regulation military saddle, in which a man has to ride on his fork, with straight legs, a maximum of balance, and a minimum of grip. A semi-military saddle, as small and light as possible, with flaps brought forward a bit, and knee-pads, as on a hunting saddle, should be substituted. It should have panels, wallets, 2 dees a side and two in the cantle for cloak and mess tin. The panels should be of plain

wood, the numdah of felt, and one blanket should be carried underneath the numdah for the use of the horse when off-saddled. None but absolutely necessary saddlery should be carried, and that should be as strong and sound as money can buy them. The loss of one "D" on active service is a very serious matter. This may sound a strange statement, but it is a fact!

The long carbine bucket is no good, it gives sore backs, and gets in the way; other wise it is a "comfort" to the individual. Besides, if a man falls off, away goes his weapon with the horse. The only two ways of carrying the rifle left to consider are (i) the short bucket for butt of rifle with arm-sling, (ii) the sling over the back. Both methods are good and suitable. The butt-bucket relieves the man when at ease. The shoulder-sling of the rifle should be made as comfortable as possible. It should be broad so as not to cut, and should be made of web or canvas. It might perhaps be possible to invent a way of slinging the rifle without a sling, by utilizing the shoulder bandolier in some way, but this has not yet been done.

Shoulder and waist bandoliers, with frog attachment to latter, are both necessary. There is still room for improvement in these to prevent cartridges dropping out. The Boer does not leave his ammunition lying about all over the country. Why do we? Perhaps, it may be that the clip method of loading is more suitable and handy than the single loading of the Lee-Enfield. Also the Boer bandolier made to hold a fully charged clip is superior to ours for preserving the ammunition, it cannot drop out. Each clip goes into a pocket, the points of the bullets only protruding through holes at the bottom, and a flap fastens down over the clip.

Good field glasses are almost as great a necessity as rifles. The glasses supplied by Government, even towards the end of this business, are astoundingly bad. Many men could make no use of them as they did not fit their width of eye. The single Zeiss is about as cheap and useful a glass as can be wished for, small and very handy on horseback. Every Non-Commissioned Officer and scout must have one. A scout without a glass is of small value. Under existing conditions a good field glass ought to be a part of every mounted man's equipment.

The uniform of the mounted force should be such as to allow of free movement and comfort in action. Breeches should be made so that a man can bend his leg, and kneel, and crawl. Coats should be made to fit well, and not too tight, so that a man may have free use of his limbs. These items though small are important.

Every squadron should have a tripod maxim. The whole should be carried on one pack horse, which can accompany the squadron everywhere. On a second pack horse should be carried a couple of boxes of ammunition. This is done here, and a maxim of this description is found most serviceable and handy.

It can be taken into places where a galloping maxim, or anything on wheels, cannot go. With practice, men can off-load and set up the maxim in no time, and little time is wasted in repacking. Those who

have had the experience of being under a warm and well-directed maxim fire thoroughly appreciate the merit of this weapon. It is said that a new maxim will shortly be brought out, firing, with an increased charge, 6,000 instead of 3,000 yards. For mounted forces, apart from the main-body, light mule trollies for transport purposes have been found most useful. Close order drill should be confined to the Manual, Physical and Bayonet Exercises, and to the drill absolutely necessary for ceremonial purposes on foot and mounted. All other drill should be in extended order, the words of command being given by signal.

In order to get the best results from officers and men and to ensure the greatest success, either in practice or in real action, it is absolutely necessary, nowadays, that a full explanation should be given to them as to what the position is believed to be, what the general scheme of operations involves, and what is the special object to be attained.

Above all things, the officers must be thoroughly trained and encouraged, in a broad and open-minded way, to act on their own responsibility and observation, with due regard to the general plan of operations.

Continual and lengthy field manœuvres, positively under service conditions in every detail, should be carried out. In suitable seasons these should be prolonged to even a month or two, acting the whole time precisely as though in presence of the enemy. No training is so useful as this, and without it men will not learn to realise the conditions of active service. Two forces could take the field and operate as opposing forces, practising Cossack posts, ambushes, night marches and attacks, scouting, bivouacking, cooking, and practical horse management. Each Brigadier, or force Commander, should keep a diary of events and of reports received by him. The diaries of opposing Commanders should be compared day by day, and the general ideas for schemes of operations should be made to, in some degree, hinge on the results of this comparison.

It is expected that the war will be practically concluded by Coronation day, and most of the country handed over to the care of the South African Constabulary.

MILITARY ENGINEERING IN THE FIELD FOR TROOPS OTHER THAN ENGINEERS, WITH SOME NOTES *RE* THE PEACE TRAINING OF MEN IN MILITARY ENGINEERING DUTIES.

A LECTURE DELIVERED AT MEERUT IN FEBRUARY 1902, BY CAPTAIN P. G. TWINING, R.E., SUPERINTENDENT OF INSTRUCTION, BENGAL SAPPERS AND MINERS.

In two papers read last year before the officers of the Meerut Garrison and published in the last number of this Journal, Major Bond drew attention to the application of entrenchments to field operations.

The advantages to be gained by the proper use of entrenchments were pointed out and emphasized by references, as well to past campaigns, as to the war at present going on in South Africa.

I propose to continue the subject, by drawing your attention more particularly, first, to the character of the Military Engineering work likely to be required in the field from troops other than Engineers, then to the sort of training which is necessary in peace-time in order to fit men for this kind of work.

I may say that my own experience has led me to believe that the soldier's training in respect of Military Engineering duties is somewhat liable to be overlooked, and that the impression is somewhat prevalent that Military Engineering is a speciality which belongs entirely to the Sappers, and does not much concern other arms.

That this view is entirely erroneous will, I think, be readily admitted if we glance for a moment at the conditions of modern warfare, and see what alterations have taken place within the past few years.

First,—with reference to the arms in use, and the changes which their improvement over those of former days have wrought.

To the increase in range, rapidity of fire and destructive effect, are due the changes which have taken place in tactics.

The old order, possible with the old single shooting rifle of comparatively short effective range, high trajectory and comparatively small penetrative effect at long ranges, is no longer possible.

Concentrated masses in attack have given place to smaller columns covered by skirmishers, small columns, to line. Line has become more extended and more flexible. Advance, even in this formation, has become slower and more deliberate. The problem to be solved—How to bring the maximum numbers through the fire swept zone to contact or attack,—has become more complex.

With modern arms, and in cases where direct attack is deemed advisable, this can best be solved by a slow step by step advance from vantage point to vantage point.

This makes it necessary that men should be trained to take advantage of ground as it exists, and further that they should be able to improvise cover during the advance in the shortest time, in whatever form is best suited to the character of ground, of the advance, and of the tools, material and means at their disposal.

While insisting on the point, however, I am aware that there is danger in insisting upon it too strongly.

I do not for a moment mean that the man should remain stationary, and never use his rifle except when he can do so from behind shelter. The advance must be continued, once a force is launched in attack.

There will, however, be moments during the course of that attack when the soldier can turn with much advantage from the rifle to the spade. He will turn to it with more advantage if in time of peace he has become accustomed to its use, and if he has been taught to look upon it, not as an encumbrance, but as that part of his equipment second in importance only to his rifle and ammunition.

This principle is, I know, recognised and yet in the course of my own work, I find men who come to me for training in Field Engineering, handle and use the spade as if it were an absolutely strange tool in their hands. They have little or no knowledge of how to use a rope or to improvise even the simplest form of bridge.

Besides what I have just said there are other reasons for requiring from all arms some knowledge of Military Engineering duties.

Armies are larger now than formerly. Larger areas are covered. Time is more than ever a limiting consideration. The knowledge of where and how to apply labour is all important. The proportion of engineers with any force is necessarily small, and their use must of necessity be confined, even more than formerly, to the general supervision of work. Detail must be left largely to officers and working parties from the various regiments engaged.

This is particularly the case with regard to the army in India. The total number of service companies of Sappers in the Indian Army is sixteen. The mobilization scheme shews four divisions, two with two companies and two with three companies, and two lines of communications with two companies; total twelve. I need hardly emphasise the inadequate number of Sapper companies available for the Field Army.

In addition to the above a number of Engineer officers would be employed as Field and Assistant Field Engineers either on detached duties or to bring the Sapper companies up to their war strength.

There are also regiments of Pioneers, but even counting these the general proportion is not large.

Then again in the training of the Sappers, what is aimed at is to make the man handy and efficient in useful trades as well in field works, and, out of the many duties which fall to the lot of the Sapper in the field, he would always be most usefully employed in those which require a knowledge of the trades he has been taught, and for which a great part of the equipment provided for him is intended.

With the great dispersion of force too comes increased need for communication between the scattered parts. Railways, telegraphs and communications generally take up large numbers of the Engineer arm.

For all these reasons, therefore, the troops themselves should be able both to improvise and carry out more of what Military Engineering work is required, than was formerly the case.

The army that realizes this, and in peace devotes part of its time to training men accordingly, will, without doubt, find itself best fitted to meet and grapple with the conditions of war when called upon to do so.

Having examined these conditions let us see how they can best be provided for.

I would consider the following points :—

- 1st*—The actual work likely to be required from soldiers in the field.
- 2nd*—The most practical way of preparing for this work, both for officers and men.

There are certain branches of Military Engineering which must from their technical nature be left entirely to men who have been specially trained in them, such as Railways, Telegraphs, Ballooning, etc.; what remains can be divided into four main heads :—

- 1st*—Work during the course of an attack.
- 2nd*—Work in connection with the occupation and defence of a position.
- 3rd*—Improvising communications.
- 4th*—Duties in connection with camps and bivouacs.

I can do nothing more than indicate in a general way what would be the probable course of a future engagement in which two large forces are in opposition, but I do not think that what has happened in South Africa can be considered as normal for future wars. Here one side was always in a purely defensive attitude. The position occupied had usually been prepared long beforehand, and the large number of mounted men at the disposal of the Boers gave them the power of quickly re-inforcing any weak or threatened point in their lines of defence.

I should say that there would be few purely defensive battles in the future. Both forces will eventually assume the offensive. The

attacking general will probably seek to outflank his enemy, but must at the same time guard against being himself outflanked by a skilful use of entrenchments and a good disposition of troops.

Such tactics require on the part of the attack, a containing force or fire position, in front of the position to be attacked; and further that force must for some time remain stationary and must protect itself, both against fire from the enemy's line and against counter-attack.

According to South African experience a section extended for attack covers a front of 150 to 200 yards. The fire position would cover considerably less ground than this per section, but even with small forces engaged it would probably extend over ground of various kinds.

Upon the Infantry will fall the duty of making this ground tenable.

Advantage will first be taken of such cover as exists, but if the turning movement is a wide one, a good deal of actual digging will eventually be required, and also the preparation of walls, banks, ditches and other accidents of the surface, so as to admit of an immediate and effective development of fire.

Again, counter-attack may have temporarily checked an advance. Possibly the line may have to await re-inforcements before advancing further.

Any temporary check may turn attack for the time into defence. In this case the spade will have all the value of extra rifles. Stones and boulders will quickly be turned into effective shelters. Any accident of the ground will be utilised, and if required for some time, must be made fit for use other than as a mere shelter, *i.e.*, for effective development of fire.

Supports, in conforming to the movements of the front firing line will also make the same use of cover, and even the third line, if there is one, must protect itself against long range fire from rifles and against artillery fire.

It is a moot point whether or no direct attack will be possible in the future. In most cases it will not, but where a notably weak point exists in a defensive line an attack in front may be advantageous. Writing on this point from South Africa, during the course of the war, Major Callwell says in his "*Tactics of to-day*,"—"a direct attack will only be possible by a process almost akin to sapping, the seizure of successive positions and fortifying them, till the enemy can be crushed by fire or ousted by a sudden dash across a very short distance. This means a large amount of hard work for the Infantry."

Turning from attack to defence, the Magazine rifle firing smokeless powder has enormously increased the extent of front which any given body of troops can hold.

Where the troops are well posted and well covered as well, their power of resistance is still further largely increased.

The selection of a defensive position and the disposition of troops are both outside the scope of this paper. It is sufficient to say that the defenders must first be posted in the most advantageous way, and afterwards covered as opportunity offers.

Here, as in the attack, the work of preparation will fall upon the infantry.

The main defensive line will require cover in excavated trenches or behind walls, banks, cuttings, etc., in an undulating and probably broken line extending from flank to flank.

Groups of buildings, enclosures, etc., may also have to be prepared for defence. The foreground will require clearance in places, while in others obstacles will have to be provided or improvised.

Sections of such a defensive line would be allotted to battalions for occupation and preparation for defence.

The responsibility rests with the officer commanding the section and with the officers under him. The work has to be done under his orders and under their supervision.

A knowledge of principles on the part of the officer and a practical knowledge on the part of the man, is necessary to the proper accomplishment of this task. Every defensive position taken up may form a part only of some tactical plan, and to ensure the success of this, the troops must be well placed, the defences well arranged and suitable, and the work quickly executed.

While on the subject of defence the work required in connection with outpost positions, particularly in this country, calls for some notice.

I cannot do better with regard to this than quote the words of a lecture delivered in Simla by Colonel Hutchison :—

Speaking of Tirah he said :—"The picquets were posted in independent positions around camps and were strong enough to be independent of support. These picquet positions were generally held by the enemy. They had first of all to be attacked and captured and when occupied, they were immediately strongly intrenched. Obstacles were placed around and outside of the positions. The sentries were inside the intrenchments, the men slept at their alarm posts. The whole of the work was done by the company or half company as the case might be, that was to occupy the post."

This is mountain warfare, but the Infantry drill book also notes the necessity there is for picquets or supports, under certain conditions, to strengthen their positions by intrenchments and obstacles.

With regard to communications, the greater part of this work will necessarily fall upon the Sappers and Pioneers as special technical knowledge is required for bridging or road making, but Infantry working parties will usually be required to assist. Special circumstances might however easily arise in which any regiment might be called upon to make a bridge or a bit of road over a small

obstacle which might otherwise seriously retard the march of a force.

Rapidity of movement is at times the all-important factor to ensure success for an undertaking, and the presence of a few handy men may make, or the want of them may easily mar, the plans of a general.

Even a slight check in front with a force of any size will throw the rear into confusion, and cause delay, which may be the cause of failure or even of disaster.

In our frontier wars in India, the protection of a camp and the comfort of troops occupying it are most important. Frontier warfare taxes the endurance of all ranks to the utmost limit, and security and rest at night are very necessary.

A defensive perimeter must be established around all camps and bivouacs in the enemy's country; it is scarcely necessary to dwell on the importance of this: our late frontier wars have shown it very plainly. General Blood's camp at Nawagai is about as good an example as can be found of the advantage gained against a night attack by a well planned defensible perimeter. For those who may wish to pursue this subject further there are some excellent examples of defensive camps and outpost positions in a little book by Major Rodwell, D. A. A. G. for Instruction, called "4 Bangalore lectures." In addition to the defences of a camp there are water-supply and cooking arrangements, and if the camp be occupied for any long period, it will be necessary to build huts or shelters.

All of this work will require Infantry working parties and may have to be carried out with but little assistance from the Engineers.

Cavalry has its own tasks not less important than those which would fall to the lot of Infantry. Demolishing or restoring communications. Clearing away obstacles. Strengthening by artificial means points seized in advance of an army, etc. They must be trained to adapt themselves to any circumstances to take advantage of ground, and to be able to adapt it to their use for dismounted action.

In the China campaign the Cavalry Brigade had attached to it a section of mounted sappers, and in South Africa the mounted detachments of Engineers have done excellent work, but no such permanent organisation is in existence in this country and even were it available, cavalry would still be called upon to assist in this description of work.

From Artillery less is required in the line of field work. In attack, screens for the guns with a possible bulletproof shelter seems to be considered the most that is necessary. In defence however detachments could, and probably would, be more adequately covered.

I think I have said enough to show what the work would be and that there would be no lack of it. Let us now consider for a few moments how the man can best be trained for it.

The basis upon which men should be trained in Military Engineering is laid down in the drill-book under the head of "Field Training"

NOTES FROM THE TRANSVAAL.

BY MAJOR H. P. WALTON, SOUTH AFRICAN CONSTABULARY

The following observations are in accordance, generally, with the views held by many officers of experience in South Africa.

A rough idea of an attack, now-a-days, is as follows — Hold the enemy in front with Infantry in position, and, with mounted troops, flank and threaten his rear. Get the enemy on the move, and have got him moving hurl all your forces at him, and never leave him, but avoid losing men by pushing Infantry against an enemy in position. Infantry should be used for holding ground, and for pressing home attacks, while mounted men should be used to seize positions rapidly, for flank movements, rear attacks, harassing operations and scouting.

Infantry for scouting are nearly, if not quite, useless in South Africa. There are two phases of scouting. One in which the scouts are the feelers of a force on the move. The other in which they are independent bodies or individuals, gathering intelligence on their own account.

Both kinds of scouting require mounted men. Every mounted man should be a good scout, and should be trained as such, and a man who is willing to learn and is not an idiot should be able to do all the duties.

It is undesirable to have a special corps of scouts, or men specially selected as scouts from corps. The other men are apt to rely on such to do all the scouting, whereas it is necessary that every man should be able, when called on, to see and to report, because the special men may not be available just when you want them, or may get killed off.

Mounted Infantry should be as good as Cavalry and Cavalry should be as good as Mounted Infantry. Such remarks as that about the ponies which convey the men to their posts on the battle-field may be orthodox drill-book tactics for Mounted Infantry, but it is found, in practice, that mounted Infantry are as good as Cavalry as Cavalry can be Cavalry in this war. So much so that the tactics of the two are indistinguishable. There is no distinction and you may "*feed the lot and call them what you please.*"

Every mounted man should carry a bayonet on his person, and a sword on his saddle. The sword should not be too weighty but a good thrusting weapon.

The shock tactics of cavalry may be more or less obsolete, but as a pursuing force, and sometimes when a charge is undertaken, nothing can make up for the want of a sword. It must be remembered that on many occasions, when the Boers have wanted to effect a surprise, or our men have been "sticky," but not in an ungetatable position, the Boers have charged us headlong, firing as they came along; and there are few instances in which these tactics have not resulted in complete success. When the Boers took our gun and gave us a "knock" at Vereeniging, they did it in this way. The other day a lot of Yeomanry were captured by the same method. It is recognised as one of their most effective tactics, and a special order has been issued as to how to meet such a move. Instances have been known in which our men have got right up against the Burgher, and the want of a sword, or some charging weapon, with which they might ride him down has been much felt. If it were possible to make every man a proficient in the use of the revolver, this would be a very useful weapon (the United States Cavalry are armed with the long barrelled Colt), but in unskilled hands it might do more injury to friends than to enemies.

The training of Cavalry and Mounted Infantry should be identically the same. Riding and shooting are the two most important essentials; and a thorough knowledge of the treatment and training of horses should be instilled into all by lectures and by practical instruction.

Horses should be trained to stand fire well when the reins are thrown over their heads, or when reins are dropped on the neck with the rider still seated. Men on horses should be trained to shoot out of the saddle at the halt, or on the move, individually, and in bodies charging in open order, firing as they advance. Men *must* be trained to shoot well on sight, up to 500 yards at least, judging distance and elevation without elevating the backsight. For mounted troops target practice at ordinary bulls'-eye targets should be wiped out as bad and obsolete. At the same time good individual shooting is an absolute necessity, to be attained less by formal drills, than by the use of individual intelligence and a thorough practical knowledge of the capacities of the rifle, to be inculcated by lectures, made interesting, and much field practice under service conditions. The new short rifle seems to be well suited for mounted troops, the long rifle being too unwieldy, and the carbine obsolete. The remarkably accurate shooting made by Boers at extreme ranges has doubtless been noted. Every attention should be paid to the lesson taught by it.

The old fashioned military riding seat should be no more seen, and with it should disappear that marvellous invention the regulation military saddle, in which a man has to ride on his fork, with straight legs, a maximum of balance, and a minimum of grip. A semi-military saddle, as small and light as possible, with flaps brought forward a bit, and knee-pads, as on a hunting saddle, should be substituted. It should have panels, wallets, 2 dees a side and two in the cantle for cloak and mess tin. The panels should be of plain

wood, the numdah of felt, and one blanket should be carried underneath the numdah for the use of the horse when off-saddled. None but absolutely necessary saddlery should be carried, and that should be as strong and sound as money can buy them. The loss of one article on active service is a very serious matter. This may sound a strange statement, but it is a fact!

The long carbine bucket is no good, it gives sore backs, and gets in the way; otherwise it is a "comfort" to the individual. However, if a man falls off, away goes his weapon with the horse. There are two ways of carrying the rifle left to consider are (i) the short bucket for butt of rifle with arm-sling, (ii) the sling over the back. Both methods are good and suitable. The butt-bucket relieves the man when at ease. The shoulder-sling of the rifle should be made as comfortable as possible. It should be broad so as not to cut, and should be made of web or canvas. It might perhaps be possible to invent a way of slinging the rifle without a sling, by utilizing the shoulder bandolier in some way, but this has not yet been done.

Shoulder and waist bandoliers, with frog attachment to latter, are both necessary. There is still room for improvement in these to prevent cartridges dropping out. The Boer does not leave his ammunition lying about all over the country. Why do we? Perhaps, it may be that the clip method of loading is more suitable and handy than the single loading of the Lee-Enfield. Also the Boer bandolier method of holding a fully charged clip is superior to ours for preserving the ammunition, it cannot drop out. Each clip goes into a pocket, the pocket, the bullet only protruding through holes at the bottom, and a strap fastens down over the clip.

Good field glasses are almost as great a necessity as rifles. The glasses supplied by Government, even towards the end of the war, were business, are astoundingly bad. Many men could make use of them as they did not fit their width of eye. The single lens is about as cheap and useful a glass as can be wished for, and is very handy on horseback. Every Non-Commissioned Officer and scout must have one. A scout without a glass is of small value. Under existing conditions a good field glass ought to be a part of every mounted man's equipment.

The uniform of the mounted force should be such as to allow of free movement and comfort in action. Breeches should be made so that a man can bend his leg, and kneel, and crawl. Coats should be made to fit well, and not too tight, so that a man may have free use of his limbs. These items though small are important.

Every squadron should have a tripod maxim. The whole should be carried on one pack horse, which can accompany the squadron everywhere. On a second pack horse should be carried a couple of boxes of ammunition. This is done here, and a maxim of this description is fast and most serviceable and handy.

It can be taken into places where a gaiting maxim, or any other on wheels, cannot go. With practice, men can off-load and set up the maxim in no time, and little time is wasted in repacking. These war

have had the experience of being under a warm and well-directed maxim fire thoroughly appreciate the merit of this weapon. It is said that a new maxim will shortly be brought out, firing, with an increased charge, 6,000 instead of 3,000 yards. For mounted forces, apart from the main-body, light mule trollies for transport purposes have been found most useful. Close order drill should be confined to the Manual, Physical and Bayonet Exercises, and to the drill absolutely necessary for ceremonial purposes on foot and mounted. All other drill should be in extended order, the words of command being given by signal.

In order to get the best results from officers and men and to ensure the greatest success, either in practice or in real action, it is absolutely necessary, nowadays, that a full explanation should be given to them as to what the position is believed to be, what the general scheme of operations involves, and what is the special object to be attained.

Above all things, the officers must be thoroughly trained and encouraged, in a broad and open-minded way, to act on their own responsibility and observation, with due regard to the general plan of operations.

Continual and lengthy field manœuvres, positively under service conditions in every detail, should be carried out. In suitable seasons these should be prolonged to even a month or two, acting the whole time precisely as though in presence of the enemy. No training is so useful as this, and without it men will not learn to realise the conditions of active service. Two forces could take the field and operate as opposing forces, practising Cossack posts, ambushes, night marches and attacks, scouting, bivouacking, cooking, and practical horse management. Each Brigadier, or force Commander, should keep a diary of events and of reports received by him. The diaries of opposing Commanders should be compared day by day, and the general ideas for schemes of operations should be made to, in some degree, hinge on the results of this comparison.

It is expected that the war will be practically concluded by Coronation day, and most of the country handed over to the care of the South African Constabulary.

MILITARY ENGINEERING IN THE FIELD FOR TROOPS OTHER THAN ENGINEERS, WITH SOME NOTES AS TO THE PEACE TRAINING OF MEN IN MILITARY ENGINEERING DUTIES.

A LECTURE DELIVERED AT MEERUT IN FEBRUARY 1902, BY CAPTAIN P. G. TWINING, R.E., SUPERINTENDENT OF INSTRUCTION, BENGAL SAPPERS AND MINERS.

In two papers read last year before the officers of the Meerut Garrison and published in the last number of this Journal, Major E. drew attention to the application of entrenchments to field operations.

The advantages to be gained by the proper use of entrenchments were pointed out and emphasized by references, as well to past campaigns, as to the war at present going on in South Africa.

I propose to continue the subject, by drawing your attention more particularly, first, to the character of the Military Engineering work likely to be required in the field from troops other than Engineers, then to the sort of training which is necessary in peace-time in order to fit men for this kind of work.

I may say that my own experience has led me to believe that the soldier's training in respect of Military Engineering duties is somewhat liable to be overlooked, and that the impression is somewhat prevalent that Military Engineering is a speciality which belongs entirely to the Sappers, and does not much concern other arms.

That this view is entirely erroneous will, I think, be readily admitted if we glance for a moment at the conditions of modern warfare, and see what alterations have taken place within the past few years.

First,—with reference to the arms in use, and the changes which their improvement over those of former days have wrought.

To the increase in range, rapidity of fire and destructive effect, are due the changes which have taken place in tactics.

The old order, possible with the old single shooting rifle of comparatively short effective range, high trajectory and comparatively small penetrative effect at long ranges, is no longer possible.

Concentrated masses in attack have given place to smaller columns covered by skirmishers, small columns, to line. Line has become more extended and more flexible. Advance, even in this formation, has become slower and more deliberate. The problem to be solved—How to bring the maximum numbers through the fire swept zone to contact or attack,—has become more complex.

With modern arms, and in cases where direct attack is deemed advisable, this can best be solved by a slow step by step advance from vantage point to vantage point.

This makes it necessary that men should be trained to take advantage of ground as it exists, and further that they should be able to improvise cover during the advance in the shortest time, in whatever form is best suited to the character of ground, of the advance, and of the tools, material and means at their disposal.

While insisting on the point, however, I am aware that there is danger in insisting upon it too strongly.

I do not for a moment mean that the man should remain stationary, and never use his rifle except when he can do so from behind shelter. The advance must be continued, once a force is launched in attack.

There will, however, be moments during the course of that attack when the soldier can turn with much advantage from the rifle to the spade. He will turn to it with more advantage if in time of peace he has become accustomed to its use, and if he has been taught to look upon it, not as an encumbrance, but as that part of his equipment second in importance only to his rifle and ammunition.

This principle is, I know, recognised and yet in the course of my own work, I find men who come to me for training in Field Engineering, handle and use the spade as if it were an absolutely strange tool in their hands. They have little or no knowledge of how to use a rope or to improvise even the simplest form of bridge.

Besides what I have just said there are other reasons for requiring from all arms some knowledge of Military Engineering duties.

Armies are larger now than formerly. Larger areas are covered. Time is more than ever a limiting consideration. The knowledge of where and how to apply labour is all important. The proportion of engineers with any force is necessarily small, and their use must of necessity be confined, even more than formerly, to the general supervision of work. Detail must be left largely to officers and working parties from the various regiments engaged.

This is particularly the case with regard to the army in India. The total number of service companies of Sappers in the Indian Army is sixteen. The mobilization scheme shews four divisions, two with two companies and two with three companies, and two lines of communications with two companies; total twelve. I need hardly emphasise the inadequate number of Sapper companies available for the Field Army.

In addition to the above a number of Engineer officers would be employed as Field and Assistant Field Engineers either on detached duties or to bring the Sapper companies up to their war strength.

There are also regiments of Pioneers, but even counting these the general proportion is not large.

Then again in the training of the Sappers, what is aimed at is to make the man handy and efficient in useful trades as well in field work, and, out of the many duties which fall to the lot of the Sapper in the field, he would always be most usefully employed in those which require a knowledge of the trades he has been taught, and for which a great part of the equipment provided for him is intended.

With the great dispersion of force too comes increased need for communication between the scattered parts. Railways, telegraphs and communications generally take up large numbers of the Engineer arm.

For all these reasons, therefore, the troops themselves should be able both to improvise and carry out more of what Military Engineering work is required, than was formerly the case.

The army that realizes this, and in peace devotes part of its time to training men accordingly, will, without doubt, find itself best fitted to meet and grapple with the conditions of war when called upon to do so.

Having examined these conditions let us see how they can best be provided for.

I would consider the following points.—

1st—The actual work likely to be required from soldiers in the field.

2nd—The most practical way of preparing for this work both for officers and men.

There are certain branches of Military Engineering which, from their technical nature, be left entirely to men who have been specially trained in them, such as Railways, Telegraphs, Ballooning, etc.; what remains can be divided into four main heads.—

1st—Work during the course of an attack.

2nd—Work in connection with the occupation and defence of a position.

3rd—Improvising communications.

4th—Duties in connection with camps and bivouacs.

I can do nothing more than indicate in a general way what would be the probable course of a future engagement in which two large forces are in opposition, but I do not think that what has happened in South Africa can be considered as normal for future wars. Here one side was always in a purely defensive attitude. The position occupied had usually been prepared long before hand, and the large number of mounted men at the disposal of the Boers gave them the power of quickly reinforcing any weak or threatened point in their lines of defence.

I should say that there would be few purely defensive battles in the future. Both forces will eventually assume the offensive. The

attacking general will probably seek to outflank his enemy, but must at the same time guard against being himself outflanked by a skilful use of entrenchments and a good disposition of troops.

Such tactics require on the part of the attack, a containing force or fire position, in front of the position to be attacked; and further that force must for some time remain stationary and must protect itself, both against fire from the enemy's line and against counter-attack.

According to South African experience a section extended for attack covers a front of 150 to 200 yards. The fire position would cover considerably less ground than this per section, but even with small forces engaged it would probably extend over ground of various kinds.

Upon the Infantry will fall the duty of making this ground tenable.

Advantage will first be taken of such cover as exists, but if the turning movement is a wide one, a good deal of actual digging will eventually be required, and also the preparation of walls, banks, ditches and other accidents of the surface, so as to admit of an immediate and effective development of fire.

Again, counter-attack may have temporarily checked an advance. Possibly the line may have to await re-inforcements before advancing further.

Any temporary check may turn attack for the time into defence. In this case the spade will have all the value of extra rifles. Stones and boulders will quickly be turned into effective shelters. Any accident of the ground will be utilised, and if required for some time, must be made fit for use other than as a mere shelter, *i.e.*, for effective development of fire.

Supports, in conforming to the movements of the front firing line will also make the same use of cover, and even the third line, if there is one, must protect itself against long range fire from rifles and against artillery fire.

It is a moot point whether or no direct attack will be possible in the future. In most cases it will not, but where a notably weak point exists in a defensive line an attack in front may be advantageous. Writing on this point from South Africa, during the course of the war, Major Callwell says in his "*Tactics of to-day*,"—"a direct attack will only be possible by a process almost akin to sapping, the seizure of successive positions and fortifying them, till the enemy can be crushed by fire or ousted by a sudden dash across a very short distance. This means a large amount of hard work for the Infantry."

Turning from attack to defence, the Magazine rifle firing smokeless powder has enormously increased the extent of front which any given body of troops can hold.

Where the troops are well posted and well covered as well, their power of resistance is still further largely increased.

The selection of a defensive position and the disposition of trenches are both outside the scope of this paper. It is sufficient to say that the defenders must first be posted in the most advantageous way and afterwards covered as opportunity offers.

Here, as in the attack, the work of preparation will fall upon the infantry.

The main defensive line will require cover in excavated trenches or behind walls, banks, cuttings, etc., in an undulating and generally broken line extending from flank to flank.

Groups of buildings, enclosures, etc., may also have to be prepared for defence. The foreground will require clearance in places, while in others obstacles will have to be provided or improvised.

Sections of such a defensive line would be allotted to battalions for occupation and preparation for defence.

The responsibility rests with the officer commanding the section and with the officers under him. The work has to be done under his orders and under their supervision.

A knowledge of principles on the part of the officer and a practical knowledge on the part of the man, is necessary to the proper accomplishment of this task. Every defensive position taken up may form a part only of some tactical plan, and to ensure the success of this, the troops must be well placed, the defences well arranged and suitable, and the work quickly executed.

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I think I have said enough to show what the work would be and that there would be no lack of it. Let us now consider for a few moments how the man can best be trained for it.

The basis upon which men should be trained in Military Engineering is laid down in the drill-book under the head of "Field Training"

and the time allotted to this subject is seven days out of a total of twenty.

Special attention is drawn in several paragraphs to the necessity for instruction being practical, and a recent addition to *Infantry Drill*, sub-sec. XII, paragraph 218, lays particular stress upon the necessity for training men to take advantage of cover, and for combining trench work with ball or blank practice, whenever ground is available.

Every battalion of British Infantry has a section of Pioneers adequately equipped and both British and Native Infantry have, also, a proportion of intrenching and cutting tools carried on pack mules.

The importance of the subject is thus recognized in the orders issued with regard to it.

Where I think the system under which instruction is carried out is faulty, is that it is not sufficiently taught and practised in connection with some definite tactical scheme, however small, whereby the man's interest can be aroused and he can be impressed with the advantage and importance of entrenchments and other Military Engineering work.

Another fault, I think, is that dimensions and types are apt to be too rigidly adhered to.

For instance, the section of a shelter trench given in the new Military Engineering Manual, which is one that will probably appear in the new Infantry Drill, shows a trench $3' \times 3' \times 5'$ with a parapet of 18" in height.

If men are persistently trained in shelter trench exercise to take out a trench of this section, there is every probability that, when required to cover themselves, they will try to adhere to the type they have been taught, which may, or may not, be at all suitable.

The section is given principally to show what the man can do in a certain time with a certain tool.

He should be practised in it up to a certain point, *i.e.*, until he is capable of doing the task in the time. Once he can do that the type should be dropped.

He should then be encouraged to design his own cover, various time limits being given, and a point being indicated against fire from which he is supposed to protect himself.

My own system with recruits on the field works course is, first of all, to let them dig trenches of any convenient section, the contents of which are equal to what the man should be able to do in from one to four hours.

When a man is once able to do the full four-hour task, he will probably retain the power of doing it whenever called upon.

I have now 150 reservists for a month's training. Most of them have been in civil life for at least a year and many for a longer period, yet in their first day's digging, there were only three men who failed to do the full four-hour task in the time.

After the men have learned the actual digging, they are practised in squads in extended order, in finding their way across broken ground so as to be seen as little as possible from a ridge on the far side. Later, they do the same practice, this time carrying a spade. They are halted at intervals and allowed from fifteen to five minutes to cover themselves as best they can. In this way the man is taught, not only to dig, but how to dig to the best advantage in a limited time.

This sort of practice is capable of a good deal of extension. Even on the range when men are moving from one firing point to another, something of this kind might be done.

Our field days, as I have seen them, are not made occasions for practise of this sort, and, it is certainly one way in this country, where there is plenty of space and no objection to breaking ground, in which regimental field training might be augmented and accentuated.

In defence, a force is seldom practised.

Has anyone here seen a force placed on the ground and given a certain time to make its position defensible.

It is a thing which we should undoubtedly have to do in war. Why not practise it in peace?

In the neighbourhood of most cantonments there is usually some ground suitable for a defensive position for a small force. Even if the actual trenches, etc., can not be taken out, they can be marked out, and the laying out of trench work is, as we have recently learned, a fine art.

There is too much of the argument so often used in amateur theatricals—"It will all come right on the night." "We can do it when we are put to it." And we have done it too, and in some cases done it well, but that does not say that it could not have been done better had it been practised beforehand.

The useful points to practise are. How to lay out trenches on the ground so as best to command the principal approaches with a minimum of work. The kind of trench which is least conspicuous, gives the best cover and it is best suited to the ground and the locality. The adaptation of accidents of the surface for the development of fire, clearing the ground and cutting scrub, etc., and loopholing. All of these are practical field works which men in the field are called upon to do time after time.

The only place in which I have seen the defence of a position actually carried out was during a recent tour of service in Canada. General Hutton issued to the Canadian Militia special instructions on this point, and during the Militia annual manoeuvres, the occupation and defence of a position was frequently practised.

While on this subject I wish to draw your attention to a very excellent form of trench where from one to two hours are available.

The dimensions are, roughly, $3\frac{1}{2}$ to 4 feet deep and $2\frac{1}{2}$ to 3 feet wide and the earth is scattered to front and rear, with a maximum

of about 9 inches in front, over which the man fires. Logs or boulders might be placed along the top of the low bank of earth as additional head cover. It is almost invisible even from a short distance and gives excellent cover.

Establishment and repair of communications is a more difficult thing to practise as it requires special materials which are not always available.

A good deal however can be done in model, using bamboos 10 to 15 feet long and a couple of inches in diameter, with log line lashings. On one occasion in East Africa I saw a very good bridge made of tent poles and some small stuff that was growing near the site. It was capable of carrying a porter with his load.

It would be a sound thing to have one or two shovels and pickaxes with the regimental mules, so that a bad place in the road which would cause a mule to alter the length of his pace and thus delay the rear of the column could be quickly repaired.

The intrenchment of an outpost position can be practised while troops are doing that part of their regimental training, and, at camps of exercise, time might be given for the defence of camps and bivouacs and for the necessary arrangements for the comfort of troops in camp.

Whatever sort of work is undertaken, it should be always explained beforehand by the Company Officer. This is most important, as any man will work more willingly and more intelligently if he understands thoroughly the why and wherefore of what he is doing.

If worked in with cold weather drills and exercises, the whole of this work can be done without much additional time being spent over it. Even if additional time be required, the profession of soldiering nowadays is a serious one. In every other profession one only spends in amusement what time one can spare. So it should be with the army. I am sure the time has come when officers and men should make every effort to be efficient in everything which concerns the profession. There should be no room in our army to-day either for the idea that these details are boresome or for the man who holds it.

It may be objected that the conditions under which we should have to fight on the frontiers of India modify much of what I have said, but let us remember that our army is Imperial and that India is only one of the many parts of the world in which we may be called upon to fight.

Even were this not so however, and suppose India to be our only battle-ground. The principles of attack and defence to which I have referred would be little altered. The advantages which ground may afford—the training of men to realise and make the best of these advantages—the necessity for communication—safety and comfort in camps, etc., all apply equally to war, whether waged in the hills of India or on the plains of Europe.

I am afraid there is little of what I have been saying that you

will consider new. I know it is ground that has often been traversed before, but I believe the subject to be one which may often be touched upon with advantage.

Not very long ago our newspapers were filled with accounts of the German and French Army manœuvres. One read of regiments and squadrons advancing to attack in close formation over ground swept by fire, with no thought even of extended order, much less of making use of the ground in their advance.

In my own experience recently in China I was a witness to similar tactics on the part of the Germans. At a field day outside Peking, under the eyes of their own Commander-in-Chief, a German force advanced in close formation up to the very muzzles of their adversaries' rifles, under conditions which in war must have meant annihilation.

If we should ever have to meet either the armies of Germany or France let us hope they will still continue these tactics, but let us try and learn ourselves something that would be less costly.

We are not by any means above criticism. I recently saw, in one of our own field days in India, an attack by two regiments carried through from start to finish, not by columns, but by dense lines of men so thick and so close together that they could never possibly have come to close quarters with their enemy had it been real instead of mimic warfare.

I fancy examples of this kind could be multiplied and it is worse than a pity that it should be so. We, of all nations, cannot afford in times of peace, to play the game of war as amateurs—our interests are too world wide—the issues that hang upon success or failure of our arms too vital.

Every detail of the soldier's training, however small, that makes for efficiency should be taken up and perfected by practice.

"As it were almost cricket—as it were even our play.

"Weighed and pondered and worshipped—practised day on day."

And what incentives we have to be earnest and thorough in our work? Our national history—the traditions of our army—the empire as it exists to-day—what are they all, but monuments to the determination, the energy, the self-sacrifice, of those who have lived and worked before us: can we then, in our generation, dare to be careless?

We are too prone to trust to our national pluck, but that alone will not serve us—it is a fine foundation to build upon—a fine thing to help one along, but, to be ultimately successful, it needs to be supplemented by training—careful and most thorough training in every one of the details that appertain to the science of modern war—of these, I consider the subject of which I have been speaking to be not the least important.

MOUNTED INFANTRY IN THE TIME OF CROMWELL.

BY CAPTAIN H. H. F. TURNER, 2ND BENGAL LANCERS.

The leading of the cavalry under Cromwell in the war between King Charles and his Parliament has attracted many students of recent years, and afforded numerous lessons in the skilful handling of that arm, of value so long as shock tactics continue to find a place on the field of battle. And not on the battlefield alone were the cavalry used with a judgment in advance of their times, but elsewhere in the theatre of war, in reconnoitring and screening duties, in rear and advance guard actions, reading of which we cannot fail to realise that we have but developed and improved upon the fundamental ideas which those old time soldiers helped to initiate.

Difference in armament must vary the conditions under which cavalry perform their duties, but Cromwell's methods in the main were as applicable to the action of bodies of mounted men at Mars la Tour or Gravelotte as they were in the days of Marston Moor and Newbery, of Naseby, Preston and Worcester. "The skilful employment of second line and reserve, the prompt and steady rally after the charge," the pursuit pressed well home, and the utmost fruits secured from the results of victory.

It would be hard to find a more marked instance of a force of cavalry held well in hand in all the excitement of successful battle after a series of victorious charges against both horse and foot than at Marston, when the Ironsides rallied by Cromwell after "scattering like a little dust" Rupert's cavaliers, and leaving the pursuit to a portion of their numbers, rapidly and continually changed their objective, and after fighting enough during that long summer evening to test the endurance of the best disciplined troops, finally crushed with fatal effects into Goring's squadrons, returning flushed and disordered from the pursuit of Fairfax's broken right wing of Puritan horse. A flexibility and discipline displayed anew with such decisive results on Naseby field.

The fight at Gainsborough in July, 1643, furnishes an interesting example of rear guard tactics, when the Roundhead Cavalry effectually covered the disordered retreat of its own infantry before an overpowering force of the enemy's horse and foot. "Major Whalley and Captain Ayscough," says the historian, "sometimes the one with four troops

Carlyle. faced the enemy, sometimes the other, to the exceeding glory of God . . . and the great honour of those two gentlemen, daring the enemy to their teeth

in eight or nine several removes, the enemy following at their heels. Colonel Cromwell gathering up the main body and facing them behind these two lesser bodies." A study in skilful reconnoitring and screening duties is obtained in Cromwell's dispositions when despatched to drive back the Scots under Hamilton in 1648. When Lambert's Cavalry were spread out between Appleby and Kendal, and along the Pennine Range, to watch the enemy advancing on the road from Carlisle towards Lancaster and Preston, with instructions to "conceal his own movements, to avoid appearing in force anywhere, never to fight, give way to pressure, and to expose as few men as possible along his front," whilst Cromwell waited behind this screen, concentrated between Leeds and York, on the flank of his enemy's advance.

Cooper-King.

With patrols maintaining touch with the Scottish army as it marched south, he was enabled to cut the straggling army in two at Preston, routing and passing the leading half across the Ribble to Wigan, whilst the rear portion at Lancaster, north of the river, were powerless to render them assistance.

The examples quoted are but a few of many. With a Cromwell in the field the action of cavalry had ceased to comprise one reckless charge, in which every available man took part, followed by a *melée* and a pursuit, in the fever of which fugitives and victors together disappeared from the field of battle, until the plunder of the enemy's camp perhaps enticed the latter from the chase and absorbed their attention for the rest of the day.

Neither did Cromwell limit his cavalry's sphere of usefulness to the battlefield, but untrained as he was himself in any school but that of experience, was one of the first to discern and perhaps the first to fully appreciate, the wider and not less important sphere of which the Preston Campaign, already referred to, is an illustration.

Cromwell's skill as a leader of cavalry is patent to all: how did he employ the new arm imported from the continent, which must have been as much of a novelty to him as to those who doubted whether the dragoon was "a foot soldier on horse-back or a horse soldier on foot"?

John Morley.

As the revival of mounted infantry is so prominent a feature in modern warfare, it may not be devoid of interest to endeavour to picture the mounted infantryman or dragoon of bygone days, and, judging from the manner in which he was employed, to trace so far as the means at hand render it possible, the rôle he was designed to fill.

It is no easy task to establish with accuracy the origin of the infantryman mounted. As far back as 1537, according to Brantome, Francis the 1st of France was shewn at the camp of Marolles a troop of mounted *Arquebusiers*, trained to fight on foot, their especial rôle being "to

Captain Painvin.

escort convoy, occupy important posts in advance of infantry and cover the retreat." Elsewhere we read that

Penison.

"Prince Alexander of Parma when, in 1552, he wished to surprise the Duke of Alençon, mounted several companies of infantry on pack horses and thus hastened towards the enemy." Nevertheless the Revd. Walter Harte, writing about the year 1750 and quoting authors contemporary with the great Swedish King, authoritatively credits Gustavus Adolphus with having been the first to mount infantry on horses with the object, as he remarks, of "combining the speed of the cavalry with the power of the infantry." Certainly it is recorded that Gustavus opened the battle of Leipzig, fought on the 7th September, 1631, nearly eleven years before the outbreak of the civil war in England, with a desperate attack by his Swedish dragoons upon the "elevated slope" which he considered the key of the enemy's position. The dragoon proper or professional mounted infantryman was thus not evolved until the 17th century. No doubt the idea was taken from continental armies in which many of the combatants of the civil war on both sides had seen service. Dragoons were at all times referred to as an arm distinct in conjunction, as a rule, with the cavalry; horse and dragoons being the usual phraseology. They were armed with musket and short sword like the infantry, the former being carried attached to a broad leather belt over the shoulder. The powder was carried in powder-horns and the charges ready made up in bandoliers. Whilst the infantry were

Baldock.

organised in battalions or tertias, the dragoons were divided into independent companies numbering, probably as in the infantry, up to 120 men each. The dragoon invariably dismounted to fight, one man holding the horses of ten of his comrades the while.

Whether supporting the cavalry of the advance guard, covering their retreat, assisting in the frequent sieges of castles, fortified towns and houses, which constituted so large a portion of the strategy of both sides; whether raiding for supplies in neighbouring counties, or intercepting the convoys of the enemy, in addition to his duties on the battlefield itself, the dragoon is found to have been allotted a distinct and important part in every operation of the war.

In July, 1643, Cromwell was hurrying to the relief of Gainsborough which the Royalists had seized by a *coup de main* on the night of the 20th of that month. He relates in his despatch how with nineteen or twenty troops of horse and three or four of dragoons about a mile and a half from the town, he came upon a forlorn hope, or advance guard, of 100 of the enemy's horse. The Puritan dragoons, of whom there were evidently some with Cromwell's own advance guard, attempted to beat them back, doubtless to gain time for the deployment of their own cavalry from column of route, and to conceal its strength from the enemy's scouts. "But not alighting off their horses the enemy charged them, and made them retire on their main body." A somewhat meagre account perhaps of that portion of the action in which we are interested, but sufficient to establish two facts—the presence

of mounted infantry in the advance guards of the period—and that as in our days the dragoon was an infantryman, neither armed nor trained to fight mounted, with no alternative but to fall back if unable to dismount and open fire.

In March of the same year we find Sir William Waller's dragoons rendering valuable service in extricating the arm to which they were allied from a situation of risk and difficulty.

Waller had been operating highly successfully in the south and west of England, but after passing from Gloucester into South Wales news reached him that Prince Maurice, with a force much superior to his own, was close upon his track. He provided for the security of his infantry and baggage by immediately despatching them across the Severn; then moving upon the right bank with the mounted troops, "he manœuvred his cavalry round," and drew them off to Gloucester, whilst his dragoons, holding the village of Little Dean, covered the movement.

It may be said that on this occasion Waller was prepared to sacrifice his mounted infantry to save his cavalry. Nevertheless his action was in keeping with contemporary military ideas and proved the high appreciation of the worth of the arm as a fighting asset, and of their mobility by which he trusted they would be able to make good their retreat. No doubt the exaggerated importance with which firearms were regarded, particularly by the cavalry, due largely of course to ignorance of what the power of the novel weapon really was, no little enhanced the prestige of the dragoon at this early period of the war. The bow had recently and reluctantly yielded place to the musket, and there were still many who advocated the former for use against cavalry owing to the confusion amongst the horses caused by the whistling arrows, and the moral effect produced amongst the troopers by the sight of these missiles flying towards them through the air.

The cavalry, the paramount arm of the time, though formidable in the offensive, was weak in the defensive rôle; thus the innovation which enabled the squadrons to carry, so to speak, the solid strength of their infantry about with them, for use at need, was readily appreciated and gladly utilised particularly as we have seen with advance and rear guards.

Early in 1645 in his despatch reporting the surrender of the strong house at Bleckington in Oxfordshire, Cromwell, the cavalry

Carlyle.

general, writes as follows:—"I did much doubt the storming of the house, it being strong and well manned, and I having few dragoons and this not my business; and yet we got it." He had been hurriedly and secretly despatched from Windsor on the 22nd April with mounted troops only, to endeavour to intercept the convoy which Charles was sending to enable Rupert to move north against the Scots under Leven. Thus it was in the absence of infantry on foot that the duties of the latter connected with the storming of fortified strongholds fell upon the dragoons.

In March of the previous year sundry Royalist risings had occurred in the eastern counties, the sphere within whose bounds Parliamentary influence was recognised as supreme. Word reached Cromwell at Norwich that the malignants of Lowestoft had overpowered the garrison and seized the town, which they were holding with the aid of some artillery. Cromwell's measures were as usual swiftly conceived and promptly executed. With cavalry and dragoons, mustering but five troops and eighty volunteers all told, he hastened to Lowestoft, and on the summons to surrender being refused detailed the dragoons for the assault. These found their task unexpectedly easy, as creeping up to within range of the enemy's ordnance, they threatened to fire, on which the gunners fled and the dragoons followed by the cavalry made good their entrance into the town.

The capture of Bath in July, 1645, tells a similar tale to the foregoing, a swift raid of horse and dragoons, effecting a complete surprise of the garrison. In this instance the dragoons pressing forward to the assault, found the drawbridge down, and dashing across secured the place after little or no resistance.

Examples could be multiplied almost indefinitely. In the earlier phases of the contest the plan of campaign may be said to have consisted almost exclusively of the systematic investment of fortress after fortress.

When the armies approached one another there was much stately and scientific manœuvring on continental lines, battle was declined as often as not, and as a matter of course if the conditions were not altogether such as the rival generals deemed suitable, when recourse was again had to a series of sieges of castles and fortified manors. It was not until Fairfax was appointed to succeed the leisurely Essex as Commander-in-Chief with Cromwell as his general of the horse, that the methods of warfare underwent a change, it was realised that the primary and all-important aim of the Parliamentary forces must be the annihilation of the enemy's army in the field, and that attained, the strongholds could be reduced when opportunity offered. The new model army was utilised on these lines, and results were not slow in proving that the later conception was the sounder strategy.

The storming of fortresses was not "the business" of the cavalry as Cromwell admitted, it was not in accordance with the traditions of the arm, and they were not equipped or trained for the purpose. The employment of infantry afforded time for warning to reach the threatened point, when celerity and secrecy were the essentials of surprise and success. The dragoon then was just the thing, the cavalry could take their stormers with them, whilst losing nothing of their mobility and adding greatly to their strength.

On the other hand when Bristol, the King's great stronghold in the west, was besieged, the investment was formally undertaken, infantry and artillery as well as the mounted arms were represented in Fairfax's army and the latter were utilised in patrolling the country outside the fortifications, to frustrate any attempt on the part of the defenders to break out.

Glancing superficially at the methods obtaining with regard to the use of mounted infantrymen in what may be termed detached duties, it appears that the fundamental ideas were much the same then as now. Mounted infantry would be still of highest value in supporting the cavalry advance guard, or with horse artillery supplying the stiffening element to the reconnoitring or screening squadrons, and in these days would not be out of place in rushing a weakly or irresolutely held post as Cromwell rushed Lowestoft and Bath. On the field of battle itself, however, the rôle allotted was one peculiar to the times, and to a military period when the shock tactics of cavalry were of paramount importance, and the other arms of value only in so far as they furnished an opportunity to or tended to further the success of the charging squadrons. Thus it is hard to find an analogy between the rôle of the dragoon in battle then and that of the mounted infantryman now so far, at all events, as the theory generating the rôle is concerned. The dragoon on the battlefield then was an accessory or subsidiary arm to the cavalry, and his part, so far as it is possible to judge, was to employ every effort in co-operation with that arm and in furthering and ensuring its success.

At Edgehill, which is the first occasion on which the dragoon comes at all prominently to notice on the battlefield, we read that the Parliamentary army provided for the security of its right flank by dragoons posted amongst the briars and bushes which existed in that portion of the "great plain field" on which lay their position. The battle commenced by some Royalist dragoons advancing and pushing the Roundhead from their ground amongst the briars, and so clearing the way for the subsequent charge of their own horse under Wilmot, against the enemy's right wing. We lose sight of them during the rest of the day.

In July, 1643, Cromwell was awaiting the arrival of reinforcements before striking a blow at the Royalist stronghold of Newark, and on the 28th at Grantham, having himself but some 12 troops of horse and dragoons, he was confronted by one and twenty colours of horse and three or four of dragoons from Newark itself.

They faced one another a little over musket range and the dragoons as was their wont endeavoured to create a diversion in favour of their own horse by opening fire on the enemy's cavalry and so creating confusion and a favourable opportunity for a charge. For half an hour or more the horsemen faced one another when the Parliamentarians no doubt restive under the fire, or perceiving that no great harm was caused by it, took the initiative and successfully charged the enemy. The dragoons do not appear to have directed their fire against those of their own arm opposing them; their rôle seems to have been exclusively an altruistic one in favour of their own cavalry, which was in those days the arm whom all looked to win the day for their side.

Dragoons, artillery, and foot were all regarded as of subsidiary value, cavalry the paramount arm; the former might stand their ground and fight with the tenacity and splendid courage of the King's

white coats at Marston or Rupert's red coats at Naseby, but the fortunes of the latter decided the battle. It is natural that it should have been so, the foot soldier's means of arresting the weight and impetus of the approaching avalanche of charging horsemen were slight indeed, the long pikes of the pikemen or the "Swedish feathers" or short stakes of the musketeers, in addition to the primitive firearms of the latter. In every action of any importance the cavalry, Cromwell's Ironsides as a general rule, eventually turned the scale, and chased the infantry from the field. No wonder then that the dragoon, unable to charge himself, was reckoned an adjunct of the cavalry to promote its success and sacrifice himself in its interests.

The fight at Wincelly in Eastern Lincolnshire presents many typical characteristics of the employment of dragoons in a cavalry engagement at the period of which we write.

Bollingbroke Castle was invested by the Parliamentary army in October, 1643; the foot and artillery were busy in pressing the siege, whilst the cavalry and dragoons were disposed as outposts to cover the operations from annoyance due to the enterprise of the cavalries in Lincoln and Newark. On the 10th the enemy drove in the outposts and on the 11th, 74 colours of Royalist horse and 21 of dragoons under Sir John Henderson, Governor of Newark, advanced to raise the siege. They were encountered near Wincelly on good cavalry ground by the Roundhead horse under the supreme command of Manchester. Both sides as a preliminary threw out their dragoons who dismounted and opened fire and both bodies of horsemen checked and closed up their disordered ranks.

And then the charging began. Cromwell led his steel-clad troopers in person; as they advanced at a trot the ever persistent dragoons fired a volley, and not without effect as Cromwell's horse fell shot under him.

The lighter Royalist cavalry, however, was unable to withstand the avalanche of picked men fortified with steel cuirass without and many a text within; the day was lost for the horsemen from Newark, though their devoted dragoons first to begin the fight and last to leave the ground, unable to mount in time, were killed to a man.

Here then we see the dragoons, dismounted probably to a flank, pushed forward as skirmishers to drive in the enemy's dragoons, and striving to attain a position protecting the flank of their own cavalry from risk of attack whilst enabling them to harass the enemy's troopers by their fire and so create confusion and secure an advantage for their own squadrons when the latter came thundering across the intervening space in the charge.

There would appear to be something not altogether dissimilar between the system under which the dragoon of the seventeenth century opened the battle with an attempt to pave the way by its fire for the attack of the arm whose assault would eventually decide the fight, and that by which the artillery of to-day prepares the assault

of the arm which must win most modern battles. It would seem that a school of tactics inculcating the demoralisation and shaking of the enemy by a storm of shrapnel before the attacking infantry can be led against the position would convey but little that was unfamiliar in theory, to the fighting Protector were it possible for him to personally superintend a general action in these days.

It is disappointing to be able to find so little record of the part played by the dragoon in the important and decisive battle of Marston Moor. The armies drawn up opposite one another, the Royalists on the edge of the moorland facing south, the Parliamentary army in the cornfields; a deep ditch between them which was itself the boundary between the moor and the cultivated land. The flanks of both armies rested on Long Marston village on the one hand and Tockwith on the other.

A narrow lane and the furze bushes of the heath existed on the Marston side, and the ditch before mentioned was there at its deepest, whilst about Tockwith on the Puritan left the country was favourable for cavalry and the ditch of no importance as an obstacle. Towards Tockwith then the Roundheads extended their left and Rupert's cavalry their right, in an attempt each to outflank the other. It was here that the dragoons became first engaged in their capacity of guardians of the flanks of the cavalry; Frizell's Scottish dragoons, detached by Cromwell to secure his left, defeating the project of some cavalries to establish themselves opposite that wing of the Parliamentary army.

Goring on the Royalist left had lined his side of the lane down which Fairfax eventually charged with dragoons, well posted behind the high banks and thick bushes which bounded it on each side, and heavy loss they inflicted as disordered from the passage of the ditch, the Puritan troopers crowded down the narrow lane, to be charged and routed by Goring's waiting squadron as soon as they emerged on the enemy's flank.

It is on the flanks of the cavalry then that we again find the dragoons at Marston as at Edgehill utilising their mobility to counteract flanking movements by the enemy, and so leave their horse a free hand in manœuvring against the hostile cavalry in their front to the best advantage.

The story of the great fight has supplied a fascinating theme to many for whom the historical associations of older and picturesque England possess a charm or to students of military history who yearn to discover the tactics of a Napoleon or a Moltke on the battlefields of the civil war. It is beyond the scope of this article to describe the battles, except in so far as the rôle of the dragoon is therein illustrated.

The quiet Yorkshire hamlet of to-day gives little indication of the troublous time through which it has passed; the villagers will show a few mounds about the battlefield under which the 4,000 gallant men

killed at Marston are supposed to sleep, likewise indicate the position where a gate once stood giving access to the lane towards which Fairfax's Rounhead horsemen wildly raced to escape Goring's pursuing squadrons. The gate was closed, the villagers relate, and a little Puritan village maid, cowering by the hedge in the meadow near by, dashed forward to open it, and in doing so was hurled to the ground and trodden under foot by the panicstricken fugitives of her own creed, whom she had sacrificed herself to save. And, again, there is the field now typical of rustic England, where Newcastle's Northumbrian white coats stood at bay, the unconquered relics of a beaten army, who refusing to yield, attacked on all sides by horse and foot, were killed almost to a man. Nought but the romantic traditions of a historic field no doubt, but traditions which help the imagination to people for a moment the quiet Yorkshire country side with the desperate combatants of two and a half centuries ago. But to return to the dragoon.

The story of Marston Moor has a striking parallel in that of Naseby field, the chief point of dissimilarity lying in the fact that on the latter occasion it was the King who was retreating when forced by the pressure of his enemies on his rear to face round and fight, whilst in the former it was Rupert's impetuosity which forced the battle upon the Parliamentary generals who were already in column of route moving towards Tadcaster. But once more at Naseby we see the Royalist horse, victorious on the wing on which Cromwell was not, leaving the field in wild pursuit of their routed foes; again we read how Cromwell's onset scattered the wing to which he was in person opposed, and, as at Marston so at Naseby, there is the powerful restraining hand on the rein of his successful regiments, the steady rally and sweeping charge against regiment after regiment of foot, until with his steel-clad Ironsides the day was won. Again a regiment of Royal infantry proved the sterling quality of the British soldier, Rupert's red coats at Naseby fighting to the end long after all was lost, like Newcastle's white coats at Marston Moor.

The dragoons at Naseby under Okey again guarded the flank, endeavouring by their fire to hamper the attack of the Royalist horse. A position consisting of a hedge and fence known as Sulky hedges, ran on the Parliamentary left perpendicular to their line of battle. From behind the cover Okey's dragoons fired briskly as Rupert's squadrons charged up the hill, but the musketry of those days was too primitive to be very effective and the cavalries passing through the fusillade routed Triton's horse on the enemy's left, and pursued them from the field. Clarendon adds the information that when all was well nigh over, and the King's cause all but lost, the dragoons assailed with their fire the last unbroken tertius of infantry on the Royal right in flank, and that the latter, already attacked in front, thereupon broke and fled.

Although the history of civil war furnishes ample evidence that the decisive quality of attacks in flank was fully appreciated by the generals on either side, yet as a rule the manœuvring was of hardly more extended a character relatively than that of the birds in a cockpit. When

both armies had completed their preparations one side usually advanced, the cavalry charged what was in front of them, and the infantry joined battle without delay, and thus the action was fought out to a finish.

It was Cromwell who first modified this stereotyped plan of attack chiefly by the firm control he exercised over his mounted troops and his judicious use of second line and reserve. But the tactics of Cromwell himself reveal little in the form of turning movements on the battlefield and certainly the dragoons were not utilised in the way except at the second battle of Newbury in any of the great engagements of which we have detailed record. Nevertheless dragoons were invariably placed on some coign of vantage on a flank and thence with their fire hampered and harassed the enemy's cavalry. To controvert this design Cromwell employed his dragoons as a species of elastic flank to be extended when necessary and to prevent the outflanking of his own cavalry.

That he realised the value of the mobility of the dragoon and his power of defence is obvious from the positions in which we find him. That Cromwell did not develop the tactics of the dragoon according to modern ideas, and execute the outflanking movements culminating in an enfilading attack on the flank of the enemy's line, tactics with which we are familiar in the mounted infantryman is of course attributable to the military conditions of the period being so little similar to those of our own time. Such action would have exposed the flank denuded of its dragoons to the assault of the enemy's cavalry; whilst, taking into consideration the primitive nature of the firearms of the period, and the importance of the cavalry phase of the contest, the effect produced on the enemy's infantry would not have compensated for the inconvenience and confusion suffered by the cavalry from their absence. As the range of firearms has increased, manœuvres have perforce become more extended. From the days of slings to bows and arrows, from the arquebus and musket, to Brown Bess, and thence to the rifled firearm of to-day, with ever-increasing range and accuracy, armies have found it vital to circle round one another, in movements ever more extended and cautious.

We will quote but one more occasion on which the employment of the dragoon illustrates the profound appreciation of the value of his power due to his firearm then no doubt greatly exaggerated, and to his mobility, which great military minds like that of Cromwell so readily experienced.

The river Severn at Worcester runs roughly north and south, the town itself being on the east bank, with a suburb on the west. Some six miles south of Worcester is the village of Upton with a bridge over the Severn; it was as far as Upton bridge then, that Prince Charles pushed his outlying parts while holding Worcester itself and the countries west of the river, when in August, 1651, having invaded England with his Scottish supporters he decided to wait there the attack of the Parliamentary army. Cromwell on the east bank with forces considerably outnumbering those of the Royalists, decided to

press his attack northwards on both banks of the river, and the capture of Upton Bridge already destroyed by the enemy was a necessary preliminary to enable him to gain access to the western side. To effect this, from Evesham where his army had arrived the day previous, he pushed on Lambert with a force of horse and dragoons. On arrival in the vicinity of the bridge 18 men of the latter dismounted, and finding the Royalist guard careless and a plank across the gap, crossed and made for a church, which they prepared to defend. They were attacked forthwith by some 300 Royalists, now fully alive to the disastrous results of their negligence. Whilst the fight progressed, more horse and dragoons crossed the stream, seeing which the enemy drew off, northwards, towards Worcester, and the crossing was secured.

Six days later Cromwell's grip had tightened around Worcester and the Royal army. The troops of the Parliament were advancing on both banks from the south to the attack, and then reserves held the high ground overlooking the town from the east. The one loophole of escape for the all but surrounded army was northwards towards Bowdley, where some twelve miles above Worcester there was a bridge over the Severn by which the fugitives might effect a crossing into Staffordshire. This outlet Cromwell effectually closed by the hasty despatch of five troops of dragoons with which to secure it, and thus intercepted the stream of fugitives flying north from Worcester after the complete rout of the Royal army on the 3rd September, the "crowning mercy" which closed Cromwell's career as a general.

It will naturally occur to students of the civil war to reflect whether Cromwell's employment of his dragoons or mounted infantry can be considered worthy of the genius for war with which he is accredited, and of the talent for organisation which he displayed so strikingly in his relations with the other arms. Genius has been defined as "the capacity for taking infinite pains."

Surely genius may be as aptly termed the possession of infinite commonsense, and truly this may be deemed to describe as simply as can be the form of genius with which the great Protector was endowed. Commonsense led Cromwell to realise that "tapsters and such mean fellows" would never win the Parliamentary battles against the well-bred, high-spirited followers of the King, and he constructed first his own regiment and subsequently the new Model Army of a material which, when trained and seasoned, carried all before it.

Cromwell's strong commonsense prompted the reform in the tactics of his cavalry described at the commencement of this article which rendered the Ironsides invincible, and the same faculty guided his use of mounted infantry. His cavalry was his most valuable yet most vulnerable arm; in his hands powerful almost irresistible in offence, weak to helplessness in defence. The dragoons were deputed to minister to the cavalry, support them in their extended duties, protect their flanks and harass their enemy on the field of battle.

In advanced and rear guards they supplied the strengthening and stiffening factor and in the latter often themselves covered the retreat. In raids against castles and convoys their value, as the arm trained to march mounted and fight on foot, was very great, and in battle they contributed by unselfish co-operation to the success of many a victorious field.

To Cromwell's commonsense too may be ascribed his appreciation of the fact that only a professional mounted infantryman, a dragoon enlisted and trained as a dragoon, not an infantryman, mounted incidentally, and as it chanced on a horse, could perform the duties which he foresaw were in store for the comrades of his cavalry.

In our day the power and range of modern firearms has restricted the employment of stock tactics by cavalry in battle to a matter of occasional opportunity, and consequently their efficiency in other operations of war besides the charge has received greater attention. The cavalry are well able to look after their own flanks nowadays and the mounted infantry are released for more important duties. From the professional dragoon or mounted foot soldier of the civil war, the mobile infantryman of to-day has been evolved; he forms part of the infantry brigade and his duties, as set forth in his drill-book, are strictly those of the infantryman, only he can do them quicker.

Consequently it may reasonably be argued that since the period of which this article treats, the military horizon of the cavalry has materially widened, whilst the sphere of usefulness of the mounted infantryman, in armies provided with a fair proportion of cavalry, has sensibly narrowed. The cavalry rôle far from having diminished in importance, has increased with the widening sphere over which its duties now extend. No longer in our day held in leash, massed, and nursed for a possible future encounter, the cavalry perform the *métier* which we have seen Cromwell himself imposed upon them at times, though which, as a general rule, fell to the dragoon, in addition to that more directly associated with the traditions of the arm.

The training and spirit of the dragoon must have been of a very high character indeed to have enabled him to play with so much credit so prominent and so varied a part in every phase of the contest.

His tactics were considerably more advanced than the weapon with which he was armed: the latter was no doubt primitive, but the former were well adapted to the military conditions prevailing at the time of the civil war in England.

ORDERS IN THE FIELD.

A LECTURE DELIVERED AT LUCKNOW ON 1ST MARCH, 1901, BY LIEUTENANT-COLONEL A. J.W. ALLEN, A. A. G., OUDH DISTRICT.

The subject on which I am to have the honor of addressing you, namely "Orders in the field" in distinction from routine orders which are issued separately, is, I have no doubt, considered by many here present to be a most uninteresting one, and yet I will venture to assert that to all soldiers it is of the greatest importance. Any of you who on service or manœuvres may have found yourselves without food, even for 24 hours, owing, perhaps, to an apparently trifling omission in divisional or brigade orders, will, I think, agree with me that with us the importance of learning how to write and transmit orders does not receive sufficient attention. Few officers except the adjutant in any regiment, as a writer in the *Pioneer* lately pointed out, have ever had any practice in writing orders, and the want of this practice leads to small things (which eventually grow into big things) being forgotten when orders are being drawn up.

In the short time at my disposal it is of course only possible to give a general idea of how orders are drawn up and issued or, in other words, what processes have to be gone through by a staff officer, after his arrival in camp or bivouac before the orders for the next move are ready to be issued, and how these orders are then conveyed to their various recipients.

General Hart, in his "Reflections on the Art of War," says : "Orders based on careful and exact calculations are of no avail if subordinates do not or cannot execute these orders opportunely."

These orders should be based on reasonable assumptions ; they should be clear and concise, yet complete and precise, and issued sufficiently early to be received by all subordinate commanders in time to make the necessary arrangements. The available power of troops depends not only on the physical condition and discipline of the men, but also on the system, skill and forethought of their leaders and above all of the general in chief command, and of the staff who are responsible for the orders issued by his direction. If orders do not meet the requirements of the particular case the most brilliant schemes and the finest combinations must fail in execution and above all counter-orders like counter-marches must be avoided in every possible way. I think, therefore, that you will all admit that it is most essential that all officers should have a general idea of the system on which orders are formulated. Von Hardegg once wrote :

"An order is short when it does not contain one word too much; complete when there is not a syllable wanting; clear when it can be comprehended by the meanest intellect; precise when it answers the questions from whom, to whom, when, and where?" In drawing up and issuing orders there are three fundamental essentials which never can alter and are the same now as they were in the time of Alexander the Great, *vis.* :—

First,—to make up your mind definitely what you wish to do and how you intend to do it.

Second,—having made up your mind, to express your decision in clear definite language, which can be understood by all concerned.

Third,—to ensure that your decision clearly expressed in the form of orders shall reach the commanders concerned at the right moment, as on this, to a great extent, depends the carrying out of military operations with the precision and certainty necessary to success. As regards the first of these essentials, the commander is assisted in coming to his decision by certain data generally furnished in war by the Intelligence Department from information gathered from inhabitants, prisoners and spies, etc.

These enable him to form the appreciation which has been defined by Sir Redvers Buller as "a military review of the actual situation culminating in a statement of the measures recommended to meet it."

From the "appreciation" the commander forms his decision and works out roughly in his mind how he proposes to distribute his troops with a view to attaining the object decided on.

The first of these essentials concerns the commander of the force who, having made up his mind, informs his staff officers, probably verbally, that he wishes to move his force to a certain position by a named time.

The staff have now to comply with the second essential and after working out all the necessary details, to express the commander's decision and intentions in clear definite language, and for small forces, in accordance with certain rules which will be referred to later on.

The third essential involves a calculation of time and distance.

For instance, it would be useless for a commander at 4 o'clock in the afternoon to issue orders for an infantry division, 6 miles distant and not in signalling communication with him, to join him at 6 o'clock that evening, as it is easy to see that it will take a mounted messenger at least an hour to reach the division and when it moves off, the division will take at least two hours before it commences to arrive; to this time must be added the delay in communicating orders to the various units, breaking up bivouac, etc., say one hour which brings us to 8 P. M. as the earliest hour the head of the division can be expected. And finally, it is very necessary to arrange for the secure transmission of the orders to their destination, as otherwise disaster may follow

through such common occurrences, as an orderly missing the road or falling into the enemy's hands. In 1807 the capture of the solitary officer, who was carrying orders to Bernadotte, delayed the arrival of that marshal's corps two days, and prevented his being able to take part in the hard fought battle of Eylau. Again on 15th June, 1815, Napoleon's advance across the Sambre, when time was all important to him, was delayed by Vandamme's corps which lay in front, and which, having received no orders, was found still in bivouac when Lobau's corps arrived, the A.-D.-C. to whom the orders for Vandamme had been entrusted having met with an accident on the way. The result was that at the close of the day 35,000 of Napoleon's men were still on the wrong side of the Sambre.

These two examples show the necessity, when the road is unsafe or difficult to traverse, of sending by different routes several copies of orders.

The Germans further lay down that if the written paper entrusted to a messenger is to be destroyed to prevent its falling into the enemy's hands, it is prudent to acquaint the messenger with its contents, so that if he escapes after destroying the written document he may still be able to convey verbally the gist of the orders delivered to him. It may be as well to commence by drawing your attention to the difference between "orders," which include army orders, army corps orders, divisional orders, brigade orders, etc., and "instructions." Orders are based on some definite knowledge of the enemy's circumstances and are as decided and detailed as possible, and it is a maxim that they are binding as long only as the circumstances under which they have been formed exist, but once these circumstances materially alter, the orders must no longer be regarded as laws which cannot be broken; in other words, a subordinate must always be ready to assume the responsibility of taking an independent resolution when the circumstances change, and I think there is no better example of the necessity for this understanding than the affair at Lindley which occurred last year in South Africa.

From the published accounts of that unfortunate business, it appears that if the original orders issued under certain conditions had not been regarded by their recipient as binding under certain other absolutely unexpected conditions, the disaster to the Imperial Yeomanry might have been averted.

"Instructions," on the other hand, are issued by a superior to the commander of a body of troops detached on some independent operation, where the superior is likely to be too distant to exercise control and the commander in charge will be thrown on his own resources for some days; they contain rather leading ideas to guide the detachment commander and set forth the views and wishes of the superior, but leave the manner of execution to the subordinate. A curious instance bringing out the difference between "instructions" and "orders" has lately come to light through the press. A German officer in the Boer service received instructions that in certain eventualities he was to blow up some of the Johannesburg mines; these eventualities

got nearer and nearer and the officer repeatedly applied to the President of the Transvaal for written orders, as he said he dared not carry out the destruction referred to in his instructions without definite written orders. President Kruger put him off and off, and finally our troops occupied Johannesburg and the Rand before "the definite orders," which had been promised, reached the German officer and thus the mines escaped destruction.

A commander gives orders only to those units immediately under him and avoids all reference to the components of these units, so the commander of an army corps issues orders to his divisions, to the corps artillery, corps engineers, cavalry brigade or division, corps ammunition column and trains, to detachments, advance guards, and so forth, only when such detachments, etc., were specially detailed by him.

The divisional commander issues orders to his brigades, to his divisional troops and to any special unit he may form as advanced guard, etc.

A brigadier-general issues orders to officers commanding battalions and the brigade departmental staff. Finally an officer commanding a battalion gives orders to officers commanding companies. Orders have a tendency to become longer as the commander from whom they emanate descends in the scale of command, owing to the necessity for going into more and more detail.

Each subordinate includes in his orders only so much of the orders received as is of general application or interest to all, such as the information as to the enemy, and as regards positions, etc., of other portions of the force to which he belongs, and the intention of the general officer commanding, then proceeds with his own executive orders drawn up in compliance with those issued by his immediate superior. For instance, "Battalion orders" will only contain the information issued by the divisional or brigade commanders as to the enemy and anything necessary about the general dispositions of the division or brigade, the intentions of the general officer commanding and the necessary orders to ensure each company fitting into its required position on the march, in the attack, or line of defence as the case may be, so as to comply with the brigade orders received.

In all cases the position of the commander of the unit concerned must be given.

All orders should show by whom they are issued and to what unit, and the place, date and hour of issue.

The following extract from the "German orders for field service" is of interest as the Germans appear to have been the first to originate the systematic issue of orders in the field: it runs as follows:—"It is not advisable that the orders of a subordinate leader should be merely a copy of those of his superior with his own additions tacked on. It will be clearer and serve his purpose better if he writes an independent order containing whatever is necessary. Where, however, large bodies are working together, the orders of the smaller units will

killed at Marston are supposed to sleep, likewise indicate the position where a gate once stood giving access to the lane towards which Fairfax's Roundhead horsemen wildly raced to escape Goring's pursuing squadrons. The gate was closed, the villagers relate, and a little Puritan village maid, cowering by the hedge in the meadow near, dashed forward to open it, and in doing so was hurled to the ground and trodden under foot by the panicstricken fugitives of her creed, whom she had sacrificed herself to save. And, again, there is the field now typical of rustic England, where Newcastle's Northampton white coats stood at bay, the unconquered relics of a beaten army, was refusing to yield, attacked on all sides by horse and foot, were almost to a man. Nought but the romantic traditions of a lost field no doubt, but traditions which help the imagination to picture for a moment the quiet Yorkshire country side with the desperate combatants of two and a half centuries ago. But to return to the dragoon.

The story of Marston Moor has a striking parallel in that of Naseby field, the chief point of dissimilarity lying in the fact that on the latter occasion it was the King who was retreating when forced by the pressure of his enemies on his rear to face round and fight, whilst in the former it was Rupert's impetuosity which forced the battle upon the Parliamentary generals who were already in column of route moving towards Tadcaster. But once more at Naseby we see the Royalist horse, victorious on the wing on which Cromwell was not, leaving the field in wild pursuit of their routed foes; again we read how Cromwell's onset scattered the wing to which he was in person opposed, and as at Marston so at Naseby, there is the powerful restraining barrier, the rein of his successful regiments, the steady rally and sweeping charge against regiment after regiment of foot, until with the unrelenting Ironsides the day was won. Again a regiment of English infantry proved the sterling quality of the British soldier, Rupert's white coats at Naseby fighting to the end long after all was lost save Newcastle's white coats at Marston Moor.

The dragoons at Naseby under Okey again guarded the flank, endeavouring by their fire to hamper the attack of the Royalist horse. A position consisting of a hedge and fence known as Suckley Beck ran on the Parliamentary left perpendicular to their line of battle. From behind the cover Okey's dragoons fired briskly as Rupert's squadrons charged up the hill, but the musketry of those days was so primitive to be very effective and the cavalries, passing through the fusillade routed Triton's horse on the enemy's left, and pursued them from the field. Clarendon adds the information that when all was well nigh over, and the King's cause all but lost, the dragoons assisted with their fire the last unbroken tertius of infantry on the Royal right in flank, and that the latter, already attacked in front, thereupon broke and fled.

Although the history of civil war furnishes ample evidence that the decisive quality of attacks in flank was fully appreciated by the generals on either side, yet as a rule the manoeuvring was of hardly more extended a character relatively than that of the birds in a cockpit. When

both armies had completed their preparations one side usually advanced, the cavalry charged what was in front of them, and the infantry joined battle without delay, and thus the action was fought out to a finish,

It was Cromwell who first modified this stereotyped plan of attack chiefly by the firm control he exercised over his mounted troops and his judicious use of second line and reserve. But the tactics of Cromwell himself reveal little in the form of turning movements on the battlefield and certainly the dragoons were not utilised in the way except at the second battle of Newbury in any of the great engagements of which we have detailed record. Nevertheless dragoons were invariably placed on some coign of vantage on a flank and thence with their fire hampered and harassed the enemy's cavalry. To controvert this design Cromwell employed his dragoons as a species of elastic flank to be extended when necessary and to prevent the outflanking of his own cavalry.

That he realised the value of the mobility of the dragoon and his power of defence is obvious from the positions in which we find him. That Cromwell did not develop the tactics of the dragoon according to modern ideas, and execute the outflanking movements culminating in an enfilading attack on the flank of the enemy's line, tactics with which we are familiar in the mounted infantryman is of course attributable to the military conditions of the period being so little similar to those of our own time. Such action would have exposed the flank denuded of its dragoons to the assault of the enemy's cavalry; whilst, taking into consideration the primitive nature of the firearms of the period, and the importance of the cavalry phase of the contest, the effect produced on the enemy's infantry would not have compensated for the inconvenience and confusion suffered by the cavalry from their absence. As the range of firearms has increased, manœuvres have perforce become more extended. From the days of slings to bows and arrows, from the arquebus and musket, to Brown Bess, and thence to the rifled firearm of to-day, with ever-increasing range and accuracy, armies have found it vital to circle round one another, in movements ever more extended and cautious.

We will quote but one more occasion on which the employment of the dragoon illustrates the profound appreciation of the value of his power due to his firearm then no doubt greatly exaggerated, and to his mobility, which great military minds like that of Cromwell so readily experienced.

The river Severn at Worcester runs roughly north and south, the town itself being on the east bank, with a suburb on the west. Some six miles south of Worcester is the village of Upton with a bridge over the Severn; it was as far as Upton bridge then, that Prince Charles pushed his outlying parts while holding Worcester itself and the countries west of the river, when in August, 1651, having invaded England with his Scottish supporters he decided to wait there the attack of the Parliamentary army. Cromwell on the east bank with forces considerably outnumbering those of the Royalists, decided to

press his attack northwards, on both banks of the river, and the capture of Upton Bridge already destroyed by the enemy was a necessary preliminary to enable him to gain access to the western side. To effect this, from Evesham where his army had arrived the day previous, he pushed on Lambert with a force of horse and dragoons. On arrival in the vicinity of the bridge 18 men of the latter party were killed and finding the Royalist guard careless and a plank across the river crossed and made for a church, which they prepared to defend. They were attacked forthwith by some 200 Royalists, now fully alive to the disastrous results of their negligence. Whilst the fight progressed more horse and dragoons crossed the stream, seeing which the enemy drew off, northwards, towards Worcester, and the crossing was secured.

Six days later Cromwell's grip had tightened around Worcester and the Royal army. The troops of the Parliament were advancing on both banks from the south to the attack, and then reserves from the high ground overlooking the town from the east. The one hole of escape for the ill but surrounded army was northwards towards Ewoseley, where some twelve miles above Worcester there was a bridge over the Severn by which the fugitives might effect a crossing into Staffordshire. This outlet Cromwell efficiently closed by the hasty despatch of five troops of dragoons with which to secure it, and thus intercepted the stream of fugitives flying northwards towards Worcester after their complete rout of the Royal army on the 3rd September, the "crowning mercy" which closed Cromwell's career as a general.

It will naturally occur to students of the civil war to think that Cromwell's employment of his dragoons or mounted infantry can be considered worthy of the genius for war with which he is associated, and of the talent for organisation which he displayed so strikingly in his relations with the other arms. Genius has been defined as "the capacity for taking infinite pains."

Surely genius may be as aptly termed the possession of common sense, and truly this may be deemed to describe as well as to define the form of genius with which the great Protector was endowed. Common sense led Cromwell to realise that "tapsters and other mean fellows" would never win the Parliamentary battles against the well-bred, high-spirited followers of the King, and he created at first his own regiment and subsequently the new Model Army of a material which, when trained and seasoned, carried a better result.

Cromwell's true common sense prompted the reform in the tactics of his cavalry described at the commencement of this article, which rendered the horse less invincible, and the same faculty guided his use of mounted infantry. His cavalry was his most valuable yet not his most vulnerable arm; in his hands powerful almost irresistible in offence, weak to helplessness in defence. The dragoons were deputised to minister to the cavalry, support them in their extended duties, protect their flank and harass the enemy on the field of battle.

In advanced and rear guards they supplied the strengthening and stiffening factor and in the latter often themselves covered the retreat. In raids against castles and convoys their value, as the arm trained to march mounted and fight on foot, was very great, and in battle they contributed by unselfish co-operation to the success of many a victorious field.

To Cromwell's commonsense too may be ascribed his appreciation of the fact that only a professional mounted infantryman, a dragoon enlisted and trained as a dragoon, not an infantryman, mounted incidentally, and as it chanced on a horse, could perform the duties which he foresaw were in store for the comrades of his cavalry.

In our day the power and range of modern firearms has restricted the employment of stock tactics by cavalry in battle to a matter of occasional opportunity, and consequently their efficiency in other operations of war besides the charge has received greater attention. The cavalry are well able to look after their own flanks nowadays and the mounted infantry are released for more important duties. From the professional dragoon or mounted foot soldier of the civil war, the mobile infantryman of to-day has been evolved; he forms part of the infantry brigade and his duties, as set forth in his drill-book, are strictly those of the infantryman, only he can do them quicker.

Consequently it may reasonably be argued that since the period of which this article treats, the military horizon of the cavalry has materially widened, whilst the sphere of usefulness of the mounted infantryman, in armies provided with a fair proportion of cavalry, has sensibly narrowed. The cavalry rôle far from having diminished in importance, has increased with the widening sphere over which its duties now extend. No longer in our day held in leash, massed, and nursed for a possible future encounter, the cavalry perform the *métier* which we have seen Cromwell himself imposed upon them at times, though which, as a general rule, fell to the dragoon, in addition to that more directly associated with the traditions of the arm.

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ORDERS IN THE FIELD.

A LECTURE DELIVERED AT LUCKNOW ON 1ST MARCH, 1901, BY LIEUTENANT-COLONEL A. J. W. ALLEN, A. A. G., OUDH DISTRICT.

The subject on which I am to have the honor of addressing you, namely "Orders in the field" in distinction from routine orders which are issued separately, is, I have no doubt, considered by many here present to be a most uninteresting one, and yet I will venture to assert that to all soldiers it is of the greatest importance. Any of you who on service or manœuvres may have found yourselves without food even for 24 hours, owing, perhaps, to an apparently trifling omission in divisional or brigade orders, will, I think, agree with me that we need the importance of learning how to write and transmit orders does not receive sufficient attention. Few officers except the adjutant in any regiment, as a writer in the *Pioneer* lately pointed out, have ever had any practice in writing orders, and the want of this practice leads to small things (which eventually grow into big things) being forgotten when orders are being drawn up.

In the short time at my disposal it is of course only possible to give a general idea of how orders are drawn up and issued or, in other words, what processes have to be gone through by a staff officer, after his arrival in camp or bivouac before the orders for the next day are ready to be issued, and how these orders are then conveyed to their various recipients.

General Hart, in his "Reflections on the Art of War," says: "Orders based on careful and exact calculations are of no avail if subordinate officers do not or cannot execute these orders opportunely."

These orders should be based on reasonable assumptions, they should be clear and concise, yet complete and precise, and issued sufficiently early to be received by all subordinate commanders in time to make the necessary arrangements. The available power of troops depends not only on the physical condition and discipline of the men, but also on the system, skill and forethought of their leaders and above all of the general in chief command, and of the staff who are responsible for the orders issued by his direction. If orders do not meet the requirements of the particular case the most beautiful schemes and the finest combinations must fail in execution and above all counter-orders like counter-marches must be avoided in every possible way. I think, therefore, that you will all admit that it is most essential that all officers should have a general idea of the system on which orders are formulated. Von Hardegg once wrote

"An order is short when it does not contain one word too much; complete when there is not a syllable wanting; clear when it can be comprehended by the meanest intellect; precise when it answers the questions from whom, to whom, when, and where?" In drawing up and issuing orders there are three fundamental essentials which never can alter and are the same now as they were in the time of Alexander the Great, *vis.* :—

First,—to make up your mind definitely what you wish to do and how you intend to do it.

Second,—having made up your mind, to express your decision in clear definite language, which can be understood by all concerned.

Third,—to ensure that your decision clearly expressed in the form of orders shall reach the commanders concerned at the right moment, as on this, to a great extent, depends the carrying out of military operations with the precision and certainty necessary to success. As regards the first of these essentials, the commander is assisted in coming to his decision by certain data generally furnished in war by the Intelligence Department from information gathered from inhabitants, prisoners and spies, etc.

These enable him to form the appreciation which has been defined by Sir Redvers Buller as "a military review of the actual situation culminating in a statement of the measures recommended to meet it."

From the "appreciation" the commander forms his decision and works out roughly in his mind how he proposes to distribute his troops with a view to attaining the object decided on.

The first of these essentials concerns the commander of the force who, having made up his mind, informs his staff officers, probably verbally, that he wishes to move his force to a certain position by a named time.

The staff have now to comply with the second essential and after working out all the necessary details, to express the commander's decision and intentions in clear definite language, and for small forces, in accordance with certain rules which will be referred to later on.

The third essential involves a calculation of time and distance.

For instance, it would be useless for a commander at 4 o'clock in the afternoon to issue orders for an infantry division, 6 miles distant and not in signalling communication with him, to join him at 6 o'clock that evening, as it is easy to see that it will take a mounted messenger at least an hour to reach the division and when it moves off, the division will take at least two hours before it commences to arrive; to this time must be added the delay in communicating orders to the various units, breaking up bivouac, etc., say one hour which brings us to 8 P. M. as the earliest hour the head of the division can be expected. And finally, it is very necessary to arrange for the secure transmission of the orders to their destination, as otherwise disaster may follow

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These two examples show the necessity, when the road is unsafe or difficult to traverse, of sending by different routes several copies of orders.

The Germans further lay down that if the written paper entrusted to a messenger is to be destroyed to prevent its falling into the enemy's hands, it is prudent to acquaint the messenger with its contents, so that if he escapes after destroying the written document he may still be able to convey verbally the gist of the orders delivered to him. It may be as well to commence by drawing your attention to the difference between "orders," which include army orders, army corps orders, divisional orders, brigade orders, etc., and "instructions." Orders are based on some definite knowledge of the enemy's circumstances and are as decided and detailed as possible, and it is a maxim that they are binding as long only as the circumstances under which they have been formed exist, but once these circumstances materially alter, the orders must no longer be regarded as laws which cannot be broken; in other words, a subordinate must always be ready to assume the responsibility of taking an independent resolution when the circumstances change, and I think there is no better example of the necessity for this understanding than the affair at Lindley which occurred last year in South Africa.

From the published accounts of that unfortunate business, it appears that if the original orders issued under certain conditions had not been regarded by their recipient as binding under certain other absolutely unexpected conditions, the disaster to the Imperial Yeomanry might have been averted.

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got nearer and nearer and the officer repeatedly applied to the President of the Transvaal for written orders, as he said he dared not carry out the destruction referred to in his instructions without definite written orders. President Kruger put him off and off, and finally our troops occupied Johannesburg and the Rand before "the definite orders," which had been promised, reached the German officer and thus the mines escaped destruction.

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The divisional commander issues orders to his brigades, to his divisional troops and to any special unit he may form as advanced guard, etc.

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The following extract from the "German orders for field service" is of interest as the Germans appear to have been the first to originate the systematic issue of orders in the field: it runs as follows:—"It is not advisable that the orders of a subordinate leader should be merely a copy of those of his superior with his own additions tacked on. It will be clearer and serve his purpose better if he writes an independent order containing whatever is necessary. Where, however, large bodies are working together, the orders of the smaller units will

press his attack northwards on both banks of the river, and the capture of Upton Bridge already destroyed by the enemy was a necessary preliminary to enable him to gain access to the western side. To effect this, from Evesham where his army had arrived the day previous, he pushed on Lamert with a force of horse and dragoons. On arrival in the vicinity of the bridge 18 men of the latter class were found and finding the Royalist guard careless and a plank across the stream crossed and made for a church, which they prepared to defend. They were attacked forthwith by some 200 Royalists, now fully alive to the disastrous results of their negligence. Whilst the fight progressed more horse and dragoons crossed the stream, seeing which the enemy drew off, northwards, towards Worcester, and the crossing was secured.

Six days later Cromwell's grip had tightened around Worcester and the Royal army. The troops of the Parliament were advancing on both banks from the south to the attack, and their reserves held the high ground overlooking the town from the east. The only hole of escape for the ill but surrounded army was now westwards towards Ewwey, where some twelve miles above Worcester there was a bridge over the Severn by which the fugitives might find a crossing into Staffordshire. This outlet Cromwell offhandedly closed by the hasty despatch of five troops of dragoons with which he intercepted the stream of fugitives fleeing northwards. Worcester after the complete rout of the Royal army on the 3rd of September, the "crowning mercy" which closed Cromwell's career as a general.

It will naturally occur to students of the civil war for the two centuries that Cromwell's employment of his dragoons or mounted infantry is not considered worthy of the genius for war with which he is a credit, and of the talent for organisation which he displayed so strikingly in his relations with the other arms. "Genius has been much abused in its capacity for taking infinite pains."

Surely genius may be as aptly termed the possession of common sense, and truly this may be deemed to describe as well as it can be the form of genius with which the great Protector was endowed. Commonsense led Cromwell to realise that "tapsters and scullion fellows" would never win the Parliamentary battles against the well-bred, high-spirited followers of the King, and he created the first his own regiment and subsequently the new Model Army, a material which, when trained and seasoned, carried a better result.

Cromwell's true commonsense prompted the reform in the tactics of his cavalry described at the commencement of this article, which rendered the horse less invulnerable, and the same faculty guided his use of mounted infantry. His cavalry was his most valuable yet most vulnerable arm; in his hands powerful almost irresistible in offence, weak to helplessness in defence. The dragoons were designated to minister to the cavalry, support them in their extended duties, protect their flank, and harass their enemy on the field of battle.

In advanced and rear guards they supplied the strengthening and stiffening factor and in the latter often themselves covered the retreat. In raids against castles and convoys their value, as the arm trained to march mounted and fight on foot, was very great, and in battle they contributed by unselfish co-operation to the success of many a victorious field.

To Cromwell's commonsense too may be ascribed his appreciation of the fact that only a professional mounted infantryman, a dragoon enlisted and trained as a dragoon, not an infantryman, mounted incidentally, and as it chanced on a horse, could perform the duties which he foresaw were in store for the comrades of his cavalry.

In our day the power and range of modern firearms has restricted the employment of stock tactics by cavalry in battle to a matter of occasional opportunity, and consequently their efficiency in other operations of war besides the charge has received greater attention. The cavalry are well able to look after their own flanks nowadays and the mounted infantry are released for more important duties. From the professional dragoon or mounted foot soldier of the civil war, the mobile infantryman of to-day has been evolved; he forms part of the infantry brigade and his duties, as set forth in his drill-book, are strictly those of the infantryman, only he can do them quicker.

Consequently it may reasonably be argued that since the period of which this article treats, the military horizon of the cavalry has materially widened, whilst the sphere of usefulness of the mounted infantryman, in armies provided with a fair proportion of cavalry, has sensibly narrowed. The cavalry rôle far from having diminished in importance, has increased with the widening sphere over which its duties now extend. No longer in our day held in leash, massed, and nursed for a possible future encounter, the cavalry perform the *métier* which we have seen Cromwell himself imposed upon them at times, though which, as a general rule, fell to the dragoon, in addition to that more directly associated with the traditions of the arm.

The training and spirit of the dragoon must have been of a very high character indeed to have enabled him to play with so much credit so prominent and so varied a part in every phase of the contest.

His tactics were considerably more advanced than the weapon with which he was armed: the latter was no doubt primitive, but the former were well adapted to the military conditions prevailing at the time of the civil war in England.

ORDERS IN THE FIELD.

A LECTURE DELIVERED AT LUCKNOW ON 1ST MARCH, 1901, BY LIEUTENANT-COLONEL A. J. W. ALLEN, A. A. G., OUDH DISTRICT.

The subject on which I am to have the honor of addressing you, namely "Orders in the field" in distinction from routine orders which are issued separately, is, I have no doubt, considered by many here present to be a most uninteresting one, and yet I will venture to assert that to all soldiers it is of the greatest importance. Any of you who on service or manœuvres may have found yourselves without food, even for 24 hours, owing, perhaps, to an apparently trifling omission in divisional or brigade orders, will, I think, agree with me that what we call the importance of learning how to write and transmit orders does not receive sufficient attention. Few officers except the adjutant of any regiment, as a writer in the *Pioneer* lately pointed out, have ever had any practice in writing orders, and the want of this practice leads to small things (which eventually grow into big things) being forgotten when orders are being drawn up.

In the short time at my disposal it is of course only possible to give a general idea of how orders are drawn up and issued or, in other words, what processes have to be gone through by a staff officer, after his arrival in camp or bivouac before the orders for the next move are ready to be issued, and how these orders are then conveyed to their various recipients.

General Hart, in his "Reflections on the Art of War," says: "Orders based on careful and exact calculations are of no avail if subordinates do not or cannot execute these orders opportunely."

These orders should be based on reasonable assumptions, they should be clear and concise, yet complete and precise, and issued sufficiently early to be received by all subordinate commanders a time to make the necessary arrangements. The available power of troops depends not only on the physical condition and discipline of the men, but also on the system, skill and forethought of their leaders and above all of the general in chief command, and of the staff who are responsible for the orders issued by his direction. If orders do not meet the requirements of the particular case the most beautiful schemes and the finest combinations must fail in execution and above all counter-orders like counter-marches must be avoided in every possible way. I think, therefore, that you will all admit that it is most essential that all officers should have a general idea of the system on which orders are formulated. Von Hardegg once wrote

"An order is short when it does not contain one word too much; complete when there is not a syllable wanting; clear when it can be comprehended by the meanest intellect; precise when it answers the questions from whom, to whom, when, and where?" In drawing up and issuing orders there are three fundamental essentials which never can alter and are the same now as they were in the time of Alexander the Great, *vis.* :—

First,—to make up your mind definitely what you wish to do and how you intend to do it.

Second,—having made up your mind, to express your decision in clear definite language, which can be understood by all concerned.

Third,—to ensure that your decision clearly expressed in the form of orders shall reach the commanders concerned at the right moment, as on this, to a great extent, depends the carrying out of military operations with the precision and certainty necessary to success. As regards the first of these essentials, the commander is assisted in coming to his decision by certain data generally furnished in war by the Intelligence Department from information gathered from inhabitants, prisoners and spies, etc.

These enable him to form the appreciation which has been defined by Sir Redvers Buller as "a military review of the actual situation culminating in a statement of the measures recommended to meet it."

From the "appreciation" the commander forms his decision and works out roughly in his mind how he proposes to distribute his troops with a view to attaining the object decided on.

The first of these essentials concerns the commander of the force who, having made up his mind, informs his staff officers, probably verbally, that he wishes to move his force to a certain position by a named time.

The staff have now to comply with the second essential and after working out all the necessary details, to express the commander's decision and intentions in clear definite language, and for small forces, in accordance with certain rules which will be referred to later on.

The third essential involves a calculation of time and distance.

For instance, it would be useless for a commander at 4 o'clock in the afternoon to issue orders for an infantry division, 6 miles distant and not in signalling communication with him, to join him at 6 o'clock that evening, as it is easy to see that it will take a mounted messenger at least an hour to reach the division and when it moves off, the division will take at least two hours before it commences to arrive; to this time must be added the delay in communicating orders to the various units, breaking up bivouac, etc., say one hour which brings us to 8 P. M. as the earliest hour the head of the division can be expected. And finally, it is very necessary to arrange for the secure transmission of the orders to their destination, as otherwise disaster may follow

through such common occurrences, as an orderly missing the road or falling into the enemy's hands. In 1807 the capture of the messenger officer, who was carrying orders to Bernadotte, delayed the arrival of that marshal's corps two days, and prevented his being able to take part in the hard fought battle of Eylau. Again on 15th June, 1814, Napoleon's advance across the Sambre, when time was a day so dear to him, was delayed by Vandamme's corps which lay in front of it, and which, having received no orders, was found still in bivouac when the other corps arrived, the A.-D.-C. to whom the orders for Vandamme had been entrusted having met with an accident on the way. The result was that at the close of the day 35,000 of Napoleon's men were on the wrong side of the Sambre.

These two examples show the necessity, when the road is dangerous or difficult to traverse, of sending by different routes several copies of orders.

The Germans further lay down that if the written paper entrusted to a messenger is to be destroyed to prevent its falling into the enemy's hands, it is prudent to acquaint the messenger with its contents, so that if he escapes after destroying the written document, he may still be able to convey verbally the gist of the orders delivered to him. It may be as well to commence by drawing your attention to the difference between "orders," which include army orders, army corps orders, divisional orders, brigade orders, etc., and "instructions." Orders are based on some definite knowledge of the enemy's circumstances and are as decided and detailed as possible, and it is assumed that they are binding as long only as the circumstances under which they have been formed exist, but since these circumstances may change, the orders must no longer be regarded as laws which cannot be broken. In other words, a subordinate must always be ready to assume the responsibility of taking an independent resolution when the circumstances change, and I think there is no better example of the necessity for this understanding than the affair at Laheij, which occurred a few years ago in South Africa.

From the published accounts of that unfortunate business it is clear that if the original orders issued under certain conditions had not been regarded by their recipient as binding under certain other conditions, the unexpected conflicts, the disaster to the Imperial Yeomanry, might have been averted.

"Instructions," on the other hand, are issued by a superior to the commander of a body of troops detached on some independent operation, where the superior is likely to be too distant to exercise control, and the commander in charge will be thrown on his own resources for some days; they contain rather leading guidelines to guide the subordinate commander and set forth the views and wishes of the superior, but leave the manner of execution to the subordinate. A German instance bringing out the difference between "instructions" and "orders" has lately come to light through the press. A German officer in the Boer service received instructions that in certain events, which he was to blow up some of the Johannesburg mines, these events, for

got nearer and nearer and the officer repeatedly applied to the President of the Transvaal for written orders, as he said he dared not carry out the destruction referred to in his instructions without definite written orders. President Kruger put him off and off, and finally our troops occupied Johannesburg and the Rand before "the definite orders," which had been promised, reached the German officer and thus the mines escaped destruction.

A commander gives orders only to those units immediately under him and avoids all reference to the components of these units, so the commander of an army corps issues orders to his divisions, to the corps artillery, corps engineers, cavalry brigade or division, corps ammunition column and trains, to detachments, advance guards, and so forth, only when such detachments, etc., were specially detailed by him.

The divisional commander issues orders to his brigades, to his divisional troops and to any special unit he may form as advanced guard, etc.

A brigadier-general issues orders to officers commanding battalions and the brigade departmental staff. Finally an officer commanding a battalion gives orders to officers commanding companies. Orders have a tendency to become longer as the commander from whom they emanate descends in the scale of command, owing to the necessity for going into more and more detail.

Each subordinate includes in his orders only so much of the orders received as is of general application or interest to all, such as the information as to the enemy, and as regards positions, etc., of other portions of the force to which he belongs, and the intention of the general officer commanding, then proceeds with his own executive orders drawn up in compliance with those issued by his immediate superior. For instance, "Battalion orders" will only contain the information issued by the divisional or brigade commanders as to the enemy and anything necessary about the general dispositions of the division or brigade, the intentions of the general officer commanding and the necessary orders to ensure each company fitting into its required position on the march, in the attack, or line of defence as the case may be, so as to comply with the brigade orders received.

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It will naturally occur to students of the civil war to reflect that Cromwell's employment of his dragoons or mounted infantry can be considered worthy of the genius for war with which he is a credit, and of the talent for organisation which he displayed so strikingly in his relations with the other arms. "Genius has been defined as the capacity for taking infinite pains."

Surely genius may be as aptly termed the possession of common sense, and truly this may be deemed to describe as well as can be the form of genius with which the great Protector was endowed. Commonsense led Cromwell to realise that "tapsters and serving men fellows" would never win the Parliamentary battles against the well bred, high-spirited followers of the King, and he created the first his own regiment and subsequently the new Model Army of a material which, when trained and seasoned, carried an better result.

Cromwell's strong commonsense prompted the reform in the training of his cavalry described at the commencement of this article which rendered the horse less invincible and the same faculty guided his use of mounted infantry. His cavalry was his most valuable yet most vulnerable arm; in his hands powerful almost irresistible in offence weak to helplessness in defence. The dragoons were deployed in number to the cavalry, support them in their extended duties, protect their flanks and harass the enemy on the field of battle.

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To Cromwell's commonsense too may be ascribed his appreciation of the fact that only a professional mounted infantryman, a dragoon enlisted and trained as a dragoon, not an infantryman, mounted incidentally, and as it chanced on a horse, could perform the duties which he foresaw were in store for the comrades of his cavalry.

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Consequently it may reasonably be argued that since the period of which this article treats, the military horizon of the cavalry has materially widened, whilst the sphere of usefulness of the mounted infantryman, in armies provided with a fair proportion of cavalry, has sensibly narrowed. The cavalry rôle far from having diminished in importance, has increased with the widening sphere over which its duties now extend. No longer in our day held in leash, massed, and nursed for a possible future encounter, the cavalry perform the *métier* which we have seen Cromwell himself imposed upon them at times, though which, as a general rule, fell to the dragoon, in addition to that more directly associated with the traditions of the arm.

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ORDERS IN THE FIELD.

A LECTURE DELIVERED AT LUCKNOW ON 1ST MARCH, 1901, BY
TENANT-COLONEL A. J. W. ALLEN, A. A. G., OUDH DISTRICT.

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In the short time at my disposal it is of course only possible to give a general idea of how orders are drawn up and issued or, in other words, what processes have to be gone through by a staff officer, after his arrival in camp or bivouac before the orders for the next day are ready to be issued, and how these orders are then conveyed to their various recipients.

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"An order is short when it does not contain one word too much; complete when there is not a syllable wanting; clear when it can be comprehended by the meanest intellect; precise when it answers the questions from whom, to whom, when, and where?" In drawing up and issuing orders there are three fundamental essentials which never can alter and are the same now as they were in the time of Alexander the Great, *vis.* :—

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Second,—having made up your mind, to express your decision in clear definite language, which can be understood by all concerned.

Third,—to ensure that your decision clearly expressed in the form of orders shall reach the commanders concerned at the right moment, as on this, to a great extent, depends the carrying out of military operations with the precision and certainty necessary to success. As regards the first of these essentials, the commander is assisted in coming to his decision by certain data generally furnished in war by the Intelligence Department from information gathered from inhabitants, prisoners and spies, etc.

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From the "appreciation" the commander forms his decision and works out roughly in his mind how he proposes to distribute his troops with a view to attaining the object decided on.

The first of these essentials concerns the commander of the force who, having made up his mind, informs his staff officers, probably verbally, that he wishes to move his force to a certain position by a named time.

The staff have now to comply with the second essential and after working out all the necessary details, to express the commander's decision and intentions in clear definite language, and for small forces, in accordance with certain rules which will be referred to later on.

The third essential involves a calculation of time and distance.

For instance, it would be useless for a commander at 4 o'clock in the afternoon to issue orders for an infantry division, 6 miles distant and not in signalling communication with him, to join him at 6 o'clock that evening, as it is easy to see that it will take a mounted messenger at least an hour to reach the division and when it moves off, the division will take at least two hours before it commences to arrive; to this time must be added the delay in communicating orders to the various units, breaking up bivouac, etc., say one hour which brings us to 8 P. M. as the earliest hour the head of the division can be expected. And finally, it is very necessary to arrange for the secure transmission of the orders to their destination, as otherwise disaster may follow

through such common occurrences, as an orderly missing the road, or falling into the enemy's hands. In 1807 the capture of the *colonel* officer, who was carrying orders to Bernadotte, delayed the arrival of that marshal's corps two days, and prevented his being able to take part in the hard fought battle of Eylau. Again, on 15th June, 1814, Napoleon's advance across the Sambre, when time was all important to him, was delayed by Vandamme's corps, which lay in front, and which, having received no orders, was found still in bivouac when the other corps arrived, the A-D-C. to whom the orders for Vandamme had been entrusted having met with an accident on the way. The result was that at the close of the day 35,000 of Napoleon's men were on the wrong side of the Sambre.

These two examples show the necessity, when the road is dangerous or difficult to traverse, of sending by different routes several copies of orders.

The Germans further lay down that if the written paper entrusted to a messenger is to be destroyed to prevent its falling into the enemy's hands, it is prudent to acquaint the messenger with its contents, so that if he escapes after destroying the written document, he may still be able to convey verbally the gist of the orders delivered to him. It may be as well to commence by drawing your attention to the difference between "orders," which include army orders, army corps orders, divisional orders, brigade orders, etc., and "instructions." Orders are based on some definite knowledge of the enemy's circumstances and are as decided and detailed as possible, and it is assumed that they are binding as long only as the circumstances under which they have been formed exist, but since these circumstances may alter, the orders must no longer be regarded as laws which must be obeyed. In other words, a subordinate must always be ready to assume the responsibility of taking an independent resolution when the circumstances change, and I think there is no better example of the necessity for this understanding than the affair at Lanchy, which occurred last year in South Africa.

From the published accounts of that unfortunate business it seems that if the original orders issued under certain conditions had not been regarded by their recipient as binding under certain other and unexpected conditions, the disaster to the Imperial Yeomanry might have been averted.

"Instructions," on the other hand, are issued by a superior to the commander of a body of troops detached on some independent operation, where the superior is likely to be too distant to exercise control, and the commander in charge will be thrown on his own resources for some days; they contain rather general guidelines to guide the subordinate commander and set forth the views and wishes of the superior, but leave the manner of execution to the subordinate. A clear instance bringing out the difference between "instructions" and "orders" has lately come to light through the press. A German officer in the Boer service received instructions that in certain events, if he was to blow up some of the Johannesburg mines, these events, in

got nearer and nearer and the officer repeatedly applied to the President of the Transvaal for written orders, as he said he dared not carry out the destruction referred to in his instructions without definite written orders. President Kruger put him off and off, and finally our troops occupied Johannesburg and the Rand before "the definite orders," which had been promised, reached the German officer and thus the mines escaped destruction.

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Each subordinate includes in his orders only so much of the orders received as is of general application or interest to all, such as the information as to the enemy, and as regards positions, etc., of other portions of the force to which he belongs, and the intention of the general officer commanding, then proceeds with his own executive orders drawn up in compliance with those issued by his immediate superior. For instance, "Battalion orders" will only contain the information issued by the divisional or brigade commanders as to the enemy and anything necessary about the general dispositions of the division or brigade, the intentions of the general officer commanding and the necessary orders to ensure each company fitting into its required position on the march, in the attack, or line of defence as the case may be, so as to comply with the brigade orders received.

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The following extract from the "German orders for field service" is of interest as the Germans appear to have been the first to originate the systematic issue of orders in the field: it runs as follows:—"It is not advisable that the orders of a subordinate leader should be merely a copy of those of his superior with his own additions tacked on. It will be clearer and serve his purpose better if he writes an independent order containing whatever is necessary. Where, however, large bodies are working together, the orders of the smaller units will

be based on the divisional orders. A subordinate leader is usually obliged to confine himself to a brief direction for the concentration of his command and then gives all further orders verbally."

The meaning of this last sentence is. I take it, that as it frequently happens on service that the situation is constantly changing, and as orders must be based on known data and must not go further than can be foreseen with tolerable certainty, it becomes necessary to issue provisional orders. For instance, let us suppose that it is getting late on in the day and a movement is contemplated for the next morning, but owing to incomplete information about the enemy, it is impossible to issue final orders before nightfall; it will therefore be best to issue brief orders over night for the troops to be ready at a certain hour next morning and for officers commanding units and staff officers to assemble at some point in sufficient time before the hour of movement, so that the final orders can be issued to them verbally by the supreme commander. By this means much unnecessary fatigue and loss of rest to officers and men will be saved. Kraft says: "we beat our enemy quite as much with the legs as with the rifles of our infantry. How will it be if we take all the strength out of those legs by making faulty arrangements for the conduct of the march." Prince Kraft gives, as an instance, the case of the Guard's corps on 30th August, 1870. On 29th August, 1870, the Prussian Guard Corps received orders about midnight to be ready to march at 9 A.M. At 6 A.M. a second order was issued directing the corps to clear out of its present line as soon as possible and take post in reserve to the east and that rations were not to be cooked till the new position had been taken up. This order could not be made known to all the troops till 6.30, by which time they had begun to cook and much of the rations must have been spoiled. A third order started at 6.30 A.M., directing a retirement on Nouart, but this did not reach the troops till 7.30. Their cooking was again interrupted and more good food wasted. Finally the Guards did not reach Nouart till noon, having been delayed by another corps crossing their line of march, and as they started again at 4 P.M. and marched till after dark, it is probable that many battalions got no regular meal on that day at all. It is now time to consider the actual forms that orders are, as a rule, issued in to small forces. You are all aware that different orders are required for different operations, such as a march, outposts, the occupation of a position, the attack of a position, and lastly a retreat.

Expert opinion varies a good deal as to the desirability of having a fixed form of orders laid down as no stereotyped form can suit every case, and also because many consider that it is not advisable to make any hard-and-fast rules for the writing of orders in the field for fear of cramping the intelligence and initiative of officers in command. In practice a certain form of orders is now generally followed in our service, and in this country a definite form for the sequence of march orders is laid down in the Field Service Manual, Part XI, section III, which staff officers proceeding on service are directed to copy into their note-books, and this form we will now glance at.

1. The first heading is "News of the enemy" and this should give in a few words sufficient information about the enemy's strength, position or movement to enable all concerned to form a fairly accurate "appreciation" of the situation, and therefore to understand the drift of the following orders.

2. Next comes the "General object of the march and the intention of the commander:" under this will be grouped the object of the commander in ordering the movement, the general line of advance and a brief statement of the commander's intentions.

3. The third heading in the case of a force of all arms is, "Cavalry reconnaissance": this will, as a rule, be simply a brief statement of any special orders for reconnaissance by the cavalry.

4. The fourth heading is the "Order of march," and includes the "Advanced, rear and flank guards and the position of the commander." This heading is the most important of all, as it contains the actual executive orders necessary to move the troops. It is usual to give the orders under this heading in the following sequence:—

(a) The order for the advanced guard, the name of the officer to command it, and the hour at which the head of the main body of the advanced guard is to move off from a named place. In the margin should be entered by arms, the troops detailed for the advanced guard, not in order of march which is left to the officer appointed to command to arrange.

(b) The distance to be maintained between the main guard of the advanced guard and the head of the main body will be mentioned here, followed by the "Order of march of the main body of the force," giving the hour at which the head of each unit must be ready at a certain named spot to take its place in the line of march. This might run as follows:—"A distance of 1,000 yards will be maintained between the rear of the main guard of the advanced guard and the head of the main body which will follow in the order and at the times mentioned in the margin, each unit joining the line of march at the ninth milestone on the trunk road."

(c) Now will follow any orders for flank guards, if such guards are required, and the name of the officers appointed to command them, the troops detailed for these duties being entered in the margin.

(d) Sub-paragraph (d) in the same way contains the orders for the rear guard and the name of the officer to command it.

(e) The position where the officer commanding the force will be found during the march, and here it is desirable to point out that if the commander leaves the position where he has notified that he will be, it is incumbent on him to arrange for the reception and forwarding to him of any reports or messages that may come in during his absence.

5. The fifth heading is "Orders as to ammunition and rations to be carried by the troops," and against it will be entered the orders as to ammunition mules in regimental charge, pukhal mules and the number of days' rations as distinct from supplies that are to be carried.

6. The sixth heading is "Ammunition Column and Commissariat, etc.," and under it are given the orders for the march of the ammunition column, the engineer field park, the field and veterinary hospitals, heavy baggage and the commissariat godown, specifying where they will join the line of march and giving the times of starting in the margin, any escorts required, and the names of the officers to command them (if considered necessary) will also be entered here.

7. The seventh and last heading is called "Special Instructions" and will include any special orders as to (a) halts, (b) outposts on arrival, (c) signalling, (d) supplies.

Let us take an example: we will suppose a force consisting of two brigades infantry, one cavalry brigade, three batteries field artillery, one divisional battalion which we will call 39th Bombay Infantry, and one company of Sappers and Miners, to be pursuing a hostile force; the orders issued one evening would be something in the following form: the times are only approximate as they have not been accurately worked out. To give an idea of how time can be saved by utilising parallel roads when possible, we will assume that the force finds three roads leading from its bivouac and running fairly parallel and at about the same distance apart in the direction of the objective.

DIVISIONAL ORDERS.

BY MAJOR-GENERAL X Y Z, NURPUR, 20TH FEBRUARY, 1902.

6 P. M.

1. The enemy is still retiring north and at 4-30 P.M., their rear guard estimated at 4 squadrons, 6 guns and 1 battalion is reported to have evacuated the village of Blankibad.

2. The division will resume the pursuit, advancing by the three roads A to W, B to Y, C to Z, with the intention of overtaking the enemy's rear guard and compelling their main body to stand and fight.

3. The cavalry brigade (less 2 squadrons 21st Bengal Lancers) will move off at 2-30 A.M. in accordance with orders communicated to Brigadier-General B.

4. The advanced guard detailed as per margin* under Lieutenant-

* *Advanced Guard*—Lieutenant-Colonel F.

1 Squadron 21st Bengal Lancers (less 1 field troop escort to General Officer Commanding).

1 Battery Field Artillery.

1 Battalion, 1st Brigade.

1 Company Sappers and Miners.

† *Road "A to W."*

1st Battalion, 2nd Brigade, 4 A.M.

21st Field Battery, 4-5 A.M.

22nd Field Battery, 4-5 A.M.

3rd Battalion, 2nd Brigade, 4-15 A.M.

Road B to Y.

Remainder of 1st Brigade 4 A.M.

2 Companies 39th Bombay Infantry, 4-15 A.M.

‡ *Right Flank Guard*—Major Q.

1 Squadron, 21st Bengal Lancers, 4-40 A.M.

2 Companies, 39th Bombay Infantry.

Rear Guard—Captain T.

2 Companies, 39th Bombay Infantry.

will march at the head of the main body on road B to Y.

5. The first reserve ammunition, water mules, signalling equipment and entrenching tools will follow immediately in rear of units. The troops will carry one day's cooked rations and two days' more will be in regimental charge.

The field hospitals and veterinary hospital will march by the

Road A to W—

Field Hospital.

2nd Brigade, 4-32 A.M.

Baggage, 2nd Brigade, 4-48 A.M.

Ammunition Column, 5-8 A.M.

Commissariat Godown, 5-15 A.M.

Road B to Y—

Field Hospital.

Cavalry Brigade, 4-20 A.M.

1st Brigade, 4-28 A.M.

Veterinary Hospital, 4-45 A.M.

Baggage, Advanced Guard, 4-48 A.M.

Baggage 1st Brigade, 5-10 P.M.

Field Park, 5-30 A.M.

same roads as those the brigades to which they belong have followed (those of the cavalry brigade moving by road "B to Y") and will follow the combatant column at a distance of 200 yards. They will be ready to join the line of march at the old temple and 9th milestone referred to in order

No. 4 at the times mentioned in the margin. The remainder of the baggage headed by that of the staff will follow the hospitals in the order of units in the column, that of the advanced guard moving by road "B to Y." The ammunition column, field park and commissariat godown will follow the baggage at the times and by the roads mentioned in the margin.

The following escorts will be detailed—

For General Officer Commanding, Field Troop 21st Bengal Lancers; for Ammunition Column and Field Hospitals on road "A to W," Company 29th Bombay Infantry. For Field Hospitals on road "B to Y," Company 39th Bombay Infantry.

The column will halt for one hour at 6 A.M., when all will close up to their proper distance, the march being resumed at 7 A.M. The divisional signalling officer will arrange to maintain communication between the main body on each road, the advanced and flank guard and if possible with the rear guard.

The commissariat will arrange for 4 days' supplies for men and 3 days' for animals being carried with the godown.

By order,

(Sd.)

Lieut Col.,

Assistant Adjutant General.

These orders give an idea of the work required before a force of any size can be moved from its camp or bivouac, as in practice the length of each unit and its baggage has to be worked out, and from this the time taken to move off has to be calculated, as by so doing much unnecessary fatigue to men and animals caused by their parading too early can be avoided.

You see that by using two of these parallel roads for the main body and baggage, the third being reserved for the flank guard required on the exposed flank, the last unit is able to move off only $1\frac{1}{2}$ hours after the head of the main body, whereas if only one road had been available the last unit would not have been able to start, till at least three hours had elapsed from the commencement of the movement, that is till 7 A.M.. Another point is that time is saved at both ends of the march; for whereas in the present case the last unit will begin to arrive in camp at, say, 5 P.M., that is in daylight, if a single road only is used it will be long after dark before the rear guard gets in. An interesting example of the wrong way of utilising parallel roads occurred in 1815 when the Prussians were moving from the Wavre on Waterloo. Two roads were available and Bulow's corps was to march by the southern of these and Zieten's by the northern. By some mistake of the Prussian staff the former in getting into position was allowed to cross the line of march of the latter and the delay thus caused can be imagined when you consider that each corps was about 3,000 strong. Again, on the eve of the battle of Wagram in 1809, Napoleon decided to throw his army over an arm of the Danube, 150

yards wide. For this purpose three bridges were constructed, and though the left bridge was assigned to the left wing, Berthier, the chief of the staff, did not observe that by mistake the centre bridge had been assigned to Davoust's corps on the right wing and the right bridge to Udenot who commanded the centre corps. These two corps passed each other in the night and had it not been for their wonderful discipline a dreadful scene of confusion might have arisen. I should before this have drawn your attention to the way baggage is usually divided in India. The "A" baggage comprises signalling equipment, 1st reserve ammunition, entrenching tools, water mules, dandies and hospital panniers, greatcoat mules and cooking pot mules, and these on the march with the exception of the last two lots of mules usually follow their own units, or the brigade to which their unit belongs. The "B" baggage includes field hospitals, brigade reserve ammunition (when not with the brigade ammunition column), staff baggage including supplies, regimental baggage, commissariat and spare animals.

As regards advanced or rear guards the orders required for these are only a modified form of those for a mixed force, but those for the attack of or occupation of a position vary considerably. The following are the general headings and sequence for orders for attack, but of course they must be modified according to necessity :—

Place, date, hour of issue.

1. Information—

- (a) as to the enemy ;
- (b) as to our other forces (where desirable).

2. The intention of the officer commanding.

3. Orders for the artillery—

- (a) as to 1st position.
- (b) as to 1st target.

(Of course the artillery may have to advance to close ranges to support the infantry advance.)

4. Orders for the infantry—

- (a) as to distribution ;
- (b) as to front to be taken up ;
- (c) as to objective ;
- (d) line of attack ;
- (e) compass bearing of objective, if necessary.

It is also generally usual to detail the officer to command the secondary attack and turning movement.

5. Orders for general reserve—

- (a) as to troops ;
- (b) as to positions.

6. Orders for the cavalry—

- (a) as to position of main body if required ;

- (b) occasionally any special instructions as to patrols, etc. ;
- (c) as to mounted infantry.
- 7. Orders for the engineers.
- 8. Order for the ammunition column.
- 9. Order for the Field Hospitals.
- 10. Position of Officer Commanding.

Special orders may also be required as to machine guns and signalling arrangements. For the occupation of a position the following would be the headings :—

Place, date, hour of issue :—

1. Information—
 - (a) as to enemy ;
 - (b) as to our other forces.
2. The intention of the officer commanding and a short statement of the circumstances leading him to form this intention. Termination of the state of march to be notified if necessary.
3. Short description of the position.
4. General distribution of troops upon the position according to the order of battle (details being left to the commander of tactical units to fix).
5. Any necessary orders for the outposts.
6. Arrangements for strengthening the position.
7. Orders as to signalling arrangements.
8. Orders as to dressing stations, reserve ammunition, baggage.
9. Position of officer commanding.

Any orders as to line of retreat and places of assembly in case of defeat should be given verbally. The orders for outposts are given in great detail in Infantry Drill, section 164, and cannot be improved on. We now come to the operation in war that, of all others, requires the most carefully worked out orders, namely a retreat. For this the orders much resemble those for a march, but it is usual slightly to alter the sequence. The orders for the heavy baggage, commissariat field hospitals and reserve ammunition which will be the first to move off, coming immediately after the intention of the commander, and that for the independent cavalry (if so used) coming last. They work out therefore as follows :—

1. Information—
 - (a) as to enemy ;
 - (b) as to our other forces.
2. Intentions of officer commanding.
3. Orders for heavy baggage, commissariat, field hospital and reserve ammunition.

5. Orders for the main body.
6. Orders for the rear guard.
7. Orders for the flank guard if required.
8. Orders regarding outposts.
9. Orders for the independent cavalry (if so employed).
10. The position of the officer commanding.

In the margin will appear the troops detailed to be sent on in advance (not in order of march) with officer nominated to command them. The main body in the order of march. The rear guard (not in order of march) with officer to command it. The flank guard with officer to command.

A recent example of a well-ordered retreat is the retirement of our troops after Spionkop behind the Tugela, when Sir Redvers Buller was able to say that "the retirement was carried out without the loss of a man or a pound of stores." Another example is the retirement from Dundee in the north of Natal when, though the troops were brought off intact, practically all the baggage had to be abandoned.

Now, gentlemen, I think you will find that in this subject as in many others an ounce of practice is worth a ton of theory, and no one will learn to write orders by listening to a lecture, but he can get an idea of what lines he has got to work on. The requirements seem simple in theory, but in practice it is very different. The uncertainty as to the enemy's situation; the bustle and strain of active operations are antagonistic to precision in orders and we can only do the best that the circumstances admit, remembering that "the successful general (and we may add staff officer) is the one who makes the fewest mistakes."

A PROPOSAL TO ENLIST PANTHAYS.

BY CAPTAIN W. H. F. BASEVI, 6TH BURMA BATTALION.

The supply of good fighting material for the Native Army is a question that has attracted some considerable attention of late years, and as the drain on the present restricted recruiting area becomes heavier the question will become more pressing. Under these circumstances it seems rather strange that the enlistment of Panthays has not apparently been seriously considered. I say "apparently" because it is quite possible that the military authorities have done so, although the matter has not come into prominence.

Panthays are Mahomedan inhabitants of Yunan and therefore are not British subjects, nor do they live in British territory. These are, however, neither of them insuperable obstacles as the objection would apply equally to Gurkhas. There are, I believe (I have no books of reference at hand), about five millions of them, and so they should ultimately be good for at least ten regiments if required.

The hatred of the Panthays for the Chinaman argues well for their loyalty to us. They are strong, of good stamina, as hard as nails, almost untirable, excellent marchers and inured to exposure both to cold and rain. They are rather hot-tempered and quick to resent an injury. They share with other Chinamen the quality of being true to a bargain when they trust the other side and also the very noticeable characteristic of devotion to their parents. The stubborn way they fought against the overwhelming power of China shows what they are capable of as soldiers. They are addicted to gambling; they all smoke opium and they require meat occasionally in addition to the rice which is their principal food.

These are, I think, all the points which it is necessary to take into consideration.

Some six years ago the Burma military police made a very half-hearted attempt, in a very small way, to enlist Panthays, but the experiment was conducted on such bad lines that failure was a foregone conclusion.

It will be instructive to consider the main faults that were made.

1. They were made to engage for three years.
2. No British officer was specially selected to look after them.
3. No officer of their own race was made.
4. No one knew their language.

5. They were kept in a district where living was dear and where a cooly could earn twice their pay.
6. Their uniform was unsuitable and they disliked it.
7. They are supposed to have all had to leave hostages in China.
8. No encouragement was given them to bring over their families.
9. Public gambling was permitted in the district to certain races and the Panthays consequently frequented the gambling places.
10. A bad lot (with a few exceptions) were originally enlisted. This was due partly to political difficulties, partly to a desire to get men quickly, partly to the officer concerned knowing nothing about the people and partly to the fact that better men could get better pay.

Let us now, bearing these lessons in mind and paying due attention to the characteristics of the people, consider how a corps might be formed with reasonable hopes of success.

A point of the first importance is that enlistment must not be in any way *sub rosa*. The consent, if not the active co-operation of the Chinese authorities, must be obtained both for the men to enlist and for their families to follow them if they wish to ; no hostages being kept.

The district in which the corps is to be stationed should be carefully selected. Some place in the Shan States would, I think, be best. The climate is (with exceptions) good, the country is much underpopulated and the soil very fertile. The reason I have mentioned the last two qualities will appear later.

It is no good to attempt to make a technically smart corps of Panthays. They must be looked upon and treated as irregulars, more for use than for show. The corps should not be moved but have a fixed station at any rate to start with.

At the commencement, the corps should consist not of Panthays only but of at least an equal proportion of Degras, Punjabi Mussalmans or Sikhs ; races of unquestioned courage, but not so excitable nor so quarrelsome as Pathans or Gurkhas. Association with these Indian soldiers, men of military instincts, on parade, in the lines, on guards and other duties will be of great educational value. Later on, if all goes well, the Indian element should be gradually eliminated.

The engagement at first should be for one year only and the commanding officer should have power to let men go even sooner, but every encouragement should be given them to re-enlist. It must be remembered that it is just as much an experiment for the men who enlist as for the Government that enlists them, and nothing should be done that might frighten them off, or cause dissatisfaction. Those who go at the end of their first year will take back with them the news of light work, kind treatment and monthly wages regularly paid, a blessing unknown

in China. If they have not disliked their year of service many of them will come back and re-enlist, bringing with them friends and relations.

Furlough should be granted from the beginning and cases of over-staying leave dealt with very leniently.

Advances of pay should be made to men going on furlough, so that they may be flush of money when they arrive at their homes. Any losses that may occur through this will be amply repaid by the good effect it will have on recruiting.

Gambling must not be permitted, but opium-smoking is a necessity and they should be allowed opium free of duty to discourage smuggling.

The ordinary pay of the sepoy in Burma would equally do for the Panthay, but the kit allowance must be increased to cover the cost and upkeep of his kit.

I would not recommend any pension being given, not anyhow to those who return to China, as by the time it reached them through the sticky fingers of Chinese officials it would hardly be worth talking about. A gratuity would be better, paid before they left, for then if the Chinese officials made a forced loan it would impress on their minds in a lucid and practical manner the great advantage of living under British rule, while with the pension, the officials would say it had never been sent. It would be wise, I think, to encourage them to settle in Burma and it was partly with this idea that I selected the Shan States as the home of the corps. There is plenty of good land there with no one to cultivate it and a colony of industrious men mostly army reservists holding plots of land on a sort of feudal tenure would be of almost inestimable advantage to the province. Here again things must be done generously. Because waste land is given there is no reason to reduce their pension or gratuity :

“ Saints themselves will sometimes be

“ Of gifts that cost them nothing free.”

But curiously enough Government sometimes falls short of even that.

Another matter must be considered. A Chinaman considers that his first duty is to his parents. If, therefore, you want him to fight you must let him know that in the event of his being killed in action, or in the execution of his duty or dying or being disabled under similar conditions, a sum of money will be paid to them. It would not have to be a very big one.

The question of arms, clothing and equipment is a minor point. They should have a rifle (without bayonet), a “dah ” (short sword) and a bandolier. Their uniform should consist of a loose coat with loose sleeves, a leather waistcoat for cold weather, Chinese (commonly and improperly called Shan) trousers, Chinese felt shoes studded with nails, also a pair of string sandals, putties, havresack, felt rug and waterproof sheet.

The officer entrusted with the duty of raising and commanding them should know them and their language and the other officers should be obliged to learn their dialect which is not difficult.

The commanding officer should be given great freedom in dealing with them. Each question should be dealt with on its merits and not according to regulation which strikes averages. They cannot understand why an injustice should be done because it is according to regulation.

I think I have touched on all the main features and I think there is every reason to hope that, if an irregular corps were raised, it would be a beginning from which great things might result.

The first difficulty would be to obtain the consent of China. Whether this is one that can be easily got over I do not know. But the consent of the Chinese Government at Peking is not enough. The Viceroy of Yunan has to be considered for he could put obstacles in the way sufficient to nullify all concessions from Peking. However the advantages to be gained are well worth taking some trouble to secure, and when one remembers that the pay of the Viceroy of Yunan is only about £700 a year and that he has to pay his secretariat and personal escort himself an easy and expeditious way out of the difficulty presents itself to one's mind.

List of Essays received for Gold Medal Competition, 1902.

No.	Motto.
1	Methods that answer are preceded by thoughts that are true.
2	War is the harvest of peace. The seed sown in peace is then reaped.
3	Ad utrumque paratus.
4	Certum pete finem.
5	Circumstances govern everything in war.
6	A horse, a horse, my kingdom for a horse!
7	Experientia docet.
8	Sub hoc signo vinces.
9	Vae victis.
10	Virtute et Labore Nihil Obatat.
11	Celer et Audax.
12	Up to date in South Africa means twenty years ahead of Continental Europe.
13	Hic fructus virtutis.
14	Tempora Mutantur nos et Mutamur in illis.
15	Assiduitate non desidia.

be based on the divisional orders. A subordinate leader is usually obliged to confine himself to a brief direction for the concentration of his command and then gives all further orders verbally."

The meaning of this last sentence is, I take it, that as it frequently happens on service that the situation is constantly changing, and as orders must be based on known data and must not go further than can be foreseen with tolerable certainty, it becomes necessary to issue provisional orders. For instance, let us suppose that it is getting on in the day and a movement is contemplated for the next morning but owing to incomplete information about the enemy, it is impossible to issue final orders before nightfall, it will therefore be best to issue brief orders over night for the troops to be ready at a certain time the next morning and for officers commanding units and staff officers to assemble at some point in sufficient time before the hour of movement so that the final orders can be issued to them verbally by the senior commander. By this means much unnecessary fatigue and loss is saved to officers and men will be saved. Kraft says "we beat the enemy quite as much with the legs as with the rifles of our infantry." What would it be if we take all the strength out of those legs by making elaborate arrangements for the conduct of the march." Prince Kratting gives as an instance, the case of the Guard's corps on 30th August, 1870. On 20th August, 1870, the Prussian Guard Corps received orders at midnight to be ready to march at 9 A.M. At 6 A.M. a second order was issued directing the corps to clear out of its present line as early as possible and take post in reserve to the east and that rations were not to be cooked till the new position had been taken up. It was not possible to make this order known to all the troops till 6-30, by which time they had begun to cook and much of the rations must have been spoiled. A third order started at 6-30 A.M., directing a retirement on Nouart, but this did not reach the troops till 7-30. Their cooking was interrupted and more good food wasted. Finally the Guard's corps did not reach Nouart till noon, having been delayed by another corps crossing their line of march, and as they started again at 4 P.M. and marched till after dark, it is probable that many battalions got no regular sleep on that day at all. It is now time to consider the actual form of orders. Orders are, as a rule, issued in to small forces. You are all aware that different orders are required for different operations, such as a march, outposts, the occupation of a position, the attack on a position, and lastly a retreat.

Expert opinion varies a good deal as to the desirability of having a fixed form of orders laid down, as no stereotyped form can suit every case, and also because many consider that it is not always possible to make any hard and fast rules for the writing of orders in the field for fear of cramping the intelligence and initiative of officers in the command. In practice a certain form of orders is now generally in use in our service, and in this country a definite form for the writing of march orders is laid down in the Field Service Regulations, Part XI, section I, which staff officers are directed to copy into their note books, and in this form we will now glance at.

1. The first heading is "News of the enemy" and this should give in a few words sufficient information about the enemy's strength, position or movement to enable all concerned to form a fairly accurate "appreciation" of the situation, and therefore to understand the drift of the following orders.

2. Next comes the "General object of the march and the intention of the commander:" under this will be grouped the object of the commander in ordering the movement, the general line of advance and a brief statement of the commander's intentions.

3. The third heading in the case of a force of all arms is, "Cavalry reconnaissance": this will, as a rule, be simply a brief statement of any special orders for reconnaissance by the cavalry.

4. The fourth heading is the "Order of march," and includes the "Advanced, rear and flank guards and the position of the commander." This heading is the most important of all, as it contains the actual executive orders necessary to move the troops. It is usual to give the orders under this heading in the following sequence:—

- (a) The order for the advanced guard, the name of the officer to command it, and the hour at which the head of the main body of the advanced guard is to move off from a named place. In the margin should be entered by arms, the troops detailed for the advanced guard, not in order of march which is left to the officer appointed to command to arrange.
- (b) The distance to be maintained between the main guard of the advanced guard and the head of the main body will be mentioned here, followed by the "Order of march of the main body of the force," giving the hour at which the head of each unit must be ready at a certain named spot to take its place in the line of march. This might run as follows:—"A distance of 1,000 yards will be maintained between the rear of the main guard of the advanced guard and the head of the main body which will follow in the order and at the times mentioned in the margin, each unit joining the line of march at the ninth milestone on the trunk road."
- (c) Now will follow any orders for flank guards, if such guards are required, and the name of the officers appointed to command them, the troops detailed for these duties being entered in the margin.
- (d) Sub-paragraph (d) in the same way contains the orders for the rear guard and the name of the officer to command it.
- (e) The position where the officer commanding the force will be found during the march, and here it is desirable to point out that if the commander leaves the position where he has notified that he will be, it is incumbent on him to arrange for the reception and forwarding to him of any reports or messages that may come in during his absence.

5. The fifth heading is "Orders as to ammunition and rations to be carried by the troops," and against it will be entered the orders as to ammunition mules in regimental charge, pukhal mules and the number of days' rations as distinct from supplies that are to be carried.

6. The sixth heading is "Ammunition Column and Commissariat, etc.," and under it are given the orders for the march of the ammunition column, the engineer field park, the field and veterinary hospitals, heavy baggage and the commissariat godown, specifying where they will join the line of march and giving the times of starting in the margin, any escorts required, and the names of the officers to command them (if considered necessary) will also be entered here.

7. The seventh and last heading is called "Special Instructions" and will include any special orders as to (a) halts, (b) outposts and arrival, (c) signalling, (d) supplies.

Let us take an example: we will suppose a force consisting of two brigades infantry, one cavalry brigade, three batteries field artillery, one divisional battalion which we will call 39th Bombay Infantry, and one company of Sappers and Miners, to be pursuing a hostile force; the orders issued one evening would be something in the following form: the times are only approximate as they have not been accurately worked out. To give an idea of how time can be saved by utilising parallel roads when possible, we will assume that the force finds three roads leading from its bivouac and running fairly parallel and at about the same distance apart in the direction of the objective.

DIVISIONAL ORDERS.

BY MAJOR-GENERAL X Y Z, NURPUR, 20TH FEBRUARY, 1902.

6 P. M.

1. The enemy is still retiring north and at 4.30 P.M., their rear guard estimated at 4 squadrons, 6 guns and 1 battalion is reported to have evacuated the village of Blankabad.

2. The division will resume the pursuit, advancing by the three roads A to W, B to Y, C to Z, with the intention of overtaking the enemy's rear guard and compelling their main body to stand and fight.

3. The cavalry brigade (less 2 squadrons 21st Bengal Lancers) will move off at 2.30 A.M. in accordance with orders communicated to Brigadier-General B.

4. The advanced guard detailed as per margin* under Lieutenant-

● *Advanced Guard*—Lieutenant-Colonel F.

1 Squadron 21st Bengal Lancers (less 1 field troop escort to General Officer Commanding).

1 Battery Field Artillery.

1 Battalion, 1st Brigade.

1 Company Sappers and Miners.

† *Road "A to W."*

1st Battalion, 2nd Brigade, 4 A.M.

21st Field Battery, 4.5 A.M.

22nd Field Battery, 4.5 A.M.

3rd Battalion, 2nd Brigade, 4.15 A.M.

Road B to Y.

Remainder of 1st Brigade 4 A.M.

2 Companies 39th Bombay Infantry, 4.15 A.M.

‡ *Right Flank Guard*—Major Q.

1 Squadron, 21st Bengal Lancers, 4.40 A.M.

2 Companies, 39th Bombay Infantry.

Rear Guard—Captain T.

2 Companies, 39th Bombay Infantry.

ing will march at the head of the main body on road B to Y.

5. The first reserve ammunition, water mules, signalling equipment and entrenching tools will follow immediately in rear of units. The troops will carry one day's cooked rations and two days' more will be in regimental charge.

The field hospitals and veterinary hospital will march by the

Road A to W—

Field Hospital.

2nd Brigade, 4.32 A.M.

Baggage, 2nd Brigade, 4.48 A.M.

Ammunition Column, 5.8 A.M.

Commissariat Godown, 5.15 A.M.

Road B to Y—

Field Hospital.

Cavalry Brigade, 4.20 A.M.

1st Brigade, 4.28 A.M.

Veterinary Hospital, 4.45 A.M.

Baggage, Advanced Guard, 4.48 A.M.

Baggage 1st Brigade, 5.10 P.M.

Field Park, 5.30 A.M.

same roads as those the brigades to which they belong have followed (those of the cavalry brigade moving by road "B to Y") and will follow the combatant column at a distance of 200 yards. They will be ready to join the line of march at the old temple and 9th milestone referred to in order

No. 4 at the times mentioned in the margin. The remainder of the baggage headed by that of the staff will follow the hospital's order of units in the column, that of the advanced guard moving on road "B to Y." The ammunition column, field park and commissariat godown will follow the baggage at the times and by the roads mentioned in the margin.

The following escorts will be detailed—

For General Officer Commanding, Field Troop 21st Bengal Engineers; for Ammunition Column and Field Hospitals on road "A to W," Company 29th Bombay Infantry. For Field Hospitals on road "B to Y," Company 35th Bombay Infantry.

The column will halt for one hour at 6 A.M., when all will move up to their proper distance, the march being resumed at 7 A.M. A divisional signalling officer will arrange to maintain communication between the main body on each road, the advanced and flank guard, and if possible with the rear guard.

The commissariat will arrange for 4 days' supplies for men and 3 days' for animals being carried with the godown.

By order,

(Sd.)

Lieut. Col.

Assistant Adjutant General.

These orders give an idea of the work required before a force of any size can be moved from its camp or bivouac, as in practice the length of each unit and its baggage has to be worked out, and for this the time taken to move off has to be calculated, as by so doing much unnecessary fatigue to men and animals caused by the starting too early can be avoided.

You see that by using two of these parallel roads for the main body and baggage, the third being reserved for the flank guard retained on the exposed flank, the last unit is able to move off only 15 minutes after the head of the main body, whereas if only one road had been available the last unit would not have been able to start until at least three hours had elapsed from the commencement of the movement, that is till 7 A.M. Another point is that time is saved at both ends of the march, for whereas in the present case the last unit will begin to arrive in camp at, say, 5 P.M., that is in daylight, if a single road only is used it will be long after dark before the rear guard gets in. An interesting example of the wrong way of utilising parallel roads occurred in 1815 when the Prussians were moving from the Wavre to Waterloo. Two roads were available and Bulow's corps was to march by the southern of these and Zieten's by the northern. By some mistake of the Prussian staff the former in getting into position was allowed to cross the line of march of the latter and the delay caused can be imagined when you consider that each corps was at least 3,000 strong. Again, on the eve of the battle of Wagram in 1809 Napoleon decided to throw his army over an arm of the Danube 15

yards wide. For this purpose three bridges were constructed, and though the left bridge was assigned to the left wing, Berthier, the chief of the staff, did not observe that by mistake the centre bridge had been assigned to Davoust's corps on the right wing and the right bridge to Oudenot who commanded the centre corps. These two corps passed each other in the night and had it not been for their wonderful discipline a dreadful scene of confusion might have arisen. I should before this have drawn your attention to the way baggage is usually divided in India. The "A" baggage comprises signalling equipment, 1st reserve ammunition, entrenching tools, water mules, dandies and hospital panniers, greatcoat mules and cooking pot mules, and these on the march with the exception of the last two lots of mules usually follow their own units, or the brigade to which their unit belongs. The "B" baggage includes field hospitals, brigade reserve ammunition (when not with the brigade ammunition column), staff baggage including supplies, regimental baggage, commissariat and spare animals.

As regards advanced or rear guards the orders required for these are only a modified form of those for a mixed force, but those for the attack of or occupation of a position vary considerably. The following are the general headings and sequence for orders for attack, but of course they must be modified according to necessity :—

Place, date, hour of issue.

1. Information—

- (a) as to the enemy ;
- (b) as to our other forces (where desirable).

2. The intention of the officer commanding.

3. Orders for the artillery—

- (a) as to 1st position.
- (b) as to 1st target.

(Of course the artillery may have to advance to close ranges to support the infantry advance.)

4. Orders for the infantry—

- (a) as to distribution ;
- (b) as to front to be taken up ;
- (c) as to objective ;
- (d) line of attack ;
- (e) compass bearing of objective, if necessary.

It is also generally usual to detail the officer to command the secondary attack and turning movement.

5. Orders for general reserve—

- (a) as to troops ;
- (b) as to positions.

6. Orders for the cavalry—

- (a) as to position of main body if required ;

- (b) occasionally any special instructions as to patrols, etc. ;
- (c) as to mounted infantry.
- 7. Orders for the engineers.
- 8. Order for the ammunition column.
- 9. Order for the Field Hospitals.
- 10. Position of Officer Commanding.

Special orders may also be required as to machine guns and signalling arrangements. For the occupation of a position the following would be the headings :—

Place, date, hour of issue :—

1. Information—
 - (a) as to enemy ;
 - (b) as to our other forces.
2. The intention of the officer commanding and a short statement of the circumstances leading him to form this intention. Termination of the state of march to be notified if necessary.
3. Short description of the position.
4. General distribution of troops upon the position according to the order of battle (details being left to the commander of tactical units to fix).
5. Any necessary orders for the outposts.
6. Arrangements for strengthening the position.
7. Orders as to signalling arrangements.
8. Orders as to dressing stations, reserve ammunition, baggage.
9. Position of officer commanding.

Any orders as to line of retreat and places of assembly in case of defeat should be given verbally. The orders for outposts are given in great detail in Infantry Drill, section 164, and cannot be improved on. We now come to the operation in war that, of all others, requires the most carefully worked out orders, namely a retreat. For this the orders much resemble those for a march, but it is usual slightly to alter the sequence. The orders for the heavy baggage, commissariat, hospitals and reserve ammunition which will be the first to move, will come immediately after the intention of the commander, and that for the independent cavalry (if so used) coming last. They work out therefore as follows :—

1. Information—
 - (a) as to enemy ;
 - (b) as to our other forces.
2. Intentions of officer commanding.
3. Orders for heavy baggage, commissariat, field hospital and reserve ammunition.

5. Orders for the main body.
6. Orders for the rear guard.
7. Orders for the flank guard if required.
8. Orders regarding outposts.
9. Orders for the independent cavalry (if so employed).
10. The position of the officer commanding.

In the margin will appear the troops detailed to be sent on in advance (not in order of march) with officer nominated to command them. The main body in the order of march. The rear guard (not in order of march) with officer to command it. The flank guard with officer to command.

A recent example of a well-ordered retreat is the retirement of our troops after Spionkop behind the Tugela, when Sir Redvers Buller was able to say that "the retirement was carried out without the loss of a man or a pound of stores." Another example is the retirement from Dundee in the north of Natal when, though the troops were brought off intact, practically all the baggage had to be abandoned.

Now, gentlemen, I think you will find that in this subject as in many others an ounce of practice is worth a ton of theory, and no one will learn to write orders by listening to a lecture, but he can get an idea of what lines he has got to work on. The requirements seem simple in theory, but in practice it is very different. The uncertainty as to the enemy's situation; the bustle and strain of active operations are antagonistic to precision in orders and we can only do the best that the circumstances admit, remembering that "the successful general (and we may add staff officer) is the one who makes the fewest mistakes."

- (b) occasionally any special instructions as to patrols, etc. ;
- (c) as to mounted infantry.
- 7. Orders for the engineers.
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- 9. Order for the Field Hospitals.
- 10. Position of Officer Commanding.

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A PROPOSAL TO ENLIST PANTHAYS.

BY CAPTAIN W. H. F. BASEVI, 6TH BURMA BATTALION.

The supply of good fighting material for the Native Army is a question that has attracted some considerable attention of late years, and as the drain on the present restricted recruiting area becomes heavier the question will become more pressing. Under these circumstances it seems rather strange that the enlistment of Panthays has not apparently been seriously considered. I say "apparently" because it is quite possible that the military authorities have done so, although the matter has not come into prominence.

Panthays are Mahomedan inhabitants of Yunan and therefore are not British subjects, nor do they live in British territory. These are, however, neither of them insuperable obstacles as the objection would apply equally to Gurkhas. There are, I believe (I have no books of reference at hand), about five millions of them, and so they should ultimately be good for at least ten regiments if required.

The hatred of the Panthays for the Chinamen argues well for their loyalty to us. They are strong, of good stamina, as hard as nails, almost untirable, excellent marchers and inured to exposure both to cold and rain. They are rather hot-tempered and quick to resent an injury. They share with other Chinamen the quality of being true to a bargain when they trust the other side and also the very noticeable characteristic of devotion to their parents. The stubborn way they fought against the overwhelming power of China shows what they are capable of as soldiers. They are addicted to gambling; they all smoke opium and they require meat occasionally in addition to the rice which is their principal food.

These are, I think, all the points which it is necessary to take into consideration.

Some six years ago the Burma military police made a very half-hearted attempt, in a very small way, to enlist Panthays, but the experiment was conducted on such bad lines that failure was a foregone conclusion.

It will be instructive to consider the main faults that were made.

1. They were made to engage for three years.
2. No British officer was specially selected to look after them.
3. No officer of their own race was made.
4. No one knew their language.

5. They were kept in a district where living was dear and where a cooly could earn twice their pay.
6. Their uniform was unsuitable and they disliked it.
7. They are supposed to have all had to leave hostages in China.
8. No encouragement was given them to bring over their families.
9. Public gambling was permitted in the district to certain races and the Panthays consequently frequented the gambling places.
10. A bad lot (with a few exceptions) were originally enlisted. This was due partly to political difficulties, partly to a desire to get men quickly, partly to the officer concerned knowing nothing about the people and partly to the fact that better men could get better pay.

Let us now, bearing these lessons in mind and paying due attention to the characteristics of the people, consider how a corps might be formed with reasonable hopes of success.

A point of the first importance is that enlistment must not be in any way *sub rosa*. The consent, if not the active co-operation of the Chinese authorities, must be obtained both for the men to enlist and for their families to follow them if they wish to ; no hostages being kept.

The district in which the corps is to be stationed should be carefully selected. Some place in the Shan States would, I think, be best. The climate is (with exceptions) good, the country is much underpopulated and the soil very fertile. The reason I have mentioned the last two qualities will appear later.

It is no good to attempt to make a technically smart corps of Panthays. They must be looked upon and treated as irregulars, more for use than for show. The corps should not be moved but have a fixed station at any rate to start with.

At the commencement, the corps should consist not of Panthays only but of at least an equal proportion of Degras, Punja'bi Mussalmans or Sikhs ; races of unquestioned courage, but not so excitable nor so quarrelsome as Pathans or Gurkhas. Association with these Indian soldiers, men of military instincts, on parade, in the lines, on guards and other duties will be of great educational value. Later on, if all goes well, the Indian element should be gradually eliminated.

The engagement at first should be for one year only and the commanding officer should have power to let men go even sooner, but every encouragement should be given them to re-enlist. It must be remembered that it is just as much an experiment for the men who enlist as for the Government that enlists them, and nothing should be done that might frighten them off, or cause dissatisfaction. Those who go at the end of their first year will take back with them the news of light work, kind treatment and monthly wages regularly paid, a blessing unknown

in China. If they have not disliked their year of service many of them will come back and re-enlist, bringing with them friends and relations.

Furlough should be granted from the beginning and cases of over-staying leave dealt with very leniently.

Advances of pay should be made to men going on furlough, so that they may be flush of money when they arrive at their homes. Any losses that may occur through this will be amply repaid by the good effect it will have on recruiting.

Gambling must not be permitted, but opium-smoking is a necessity and they should be allowed opium free of duty to discourage smuggling.

The ordinary pay of the sepoy in Burma would equally do for the Panthay, but the kit allowance must be increased to cover the cost and upkeep of his kit.

I would not recommend any pension being given, not anyhow to those who return to China, as by the time it reached them through the sticky fingers of Chinese officials it would hardly be worth talking about. A gratuity would be better, paid before they left, for then if the Chinese officials made a forced loan it would impress on their minds in a bold and practical manner the great advantage of living under British rule, while with the pension, the officials would say it had never been sent. It would be wise, I think, to encourage them to settle in Burma and it was partly with this idea that I selected the Shan States as the home of the corps. There is plenty of good land there with no one to cultivate it and a colony of industrious men mostly army reservists holding plots of land on a sort of feudal tenure would be of almost incalculable advantage to the province. Here again things must be done generously. Because waste land is given there is no reason to reduce their pension or gratuity:

"Saints themselves will sometimes be

"Of gifts that cost them nothing free."

But curiously enough Government sometimes falls short of even that.

Another matter must be considered. A Chinaman considers that his first duty is to his parents. If, therefore, you want him to fight you must let him know that in the event of his being killed in action, or in the execution of his duty or dying or being disabled under similar conditions, a sum of money will be paid to them. It would not have to be a very big one.

The question of arms, clothing and equipment is a minor point. They should have a rifle (without bayonet), a "dah" (short sword) and a bandolier. Their uniform should consist of a loose coat with loose sleeves, a leather waist coat for cold weather, Chinese common style and improperly called Shan trousers, Chinese foot shoes studded with nails, a soap pair of string sandals, potties, haversack, felt rug and waterproof sheet.

The officer entrusted with the duty of raising and commanding them should know them and their language and the other officers should be obliged to learn their dialect which is not difficult.

The commanding officer should be given great freedom in dealing with them. Each question should be dealt with on its merits and not according to regulation which strikes averages. They cannot understand why an injustice should be done because it is according to regulation.

I think I have touched on all the main features and I think there is every reason to hope that, if an irregular corps were raised, it would be a beginning from which great things might result.

The first difficulty would be to obtain the consent of China. Whether this is one that can be easily got over I do not know. But the consent of the Chinese Government at Peking is not enough. The Viceroy of Yunan has to be considered for he could put obstacles in the way sufficient to nullify all concessions from Peking. However the advantages to be gained are well worth taking some trouble to secure, and when one remembers that the pay of the Viceroy of Yunan is only about £700 a year and that he has to pay his secretariat and personal escort himself an easy and expeditious way out of the difficulty presents itself to one's mind.

List of Essays received for Gold Medal Competition, 1902.

No.	Motto.
1	Methods that answer are preceded by thoughts that are true.
2	War is the harvest of peace. The seed sown in peace is then reaped.
3	Ad utrumque paratus.
4	Certum pete finem.
5	Circumstances govern everything in war.
6	A horse, a horse, my kingdom for a horse!
7	Experientia docet.
8	Sub hoc signo vinces.
9	Vae Victis.
10	Virtute et Labore Nihil Obstat.
11	Celer et Audax.
12	Up to date in South Africa means twenty years ahead of Continental Europe.
13	Hic fructus virtutis.
14	Tempora Mutantur nos et Mutamur in illis.
15	Assiduitate non desidia.

REDUCED CHARGES FOR THE '303 RIFLE AND CARBINE FOR SHORT RANGE PRACTICE AND INSTRUCTION.

By LIEUTENANT-COLONEL F. F. R. BURGESS, I.S.C.

I have done a good deal of experimenting with reduced charge short range ammunition in the '303 rifle, and as it gives excellent results as regards accuracy, does not in any way injure the rifle in the slightest and costs very little to prepare if fired cartridge cases are made use of for refilling, I think this note may, perhaps, be of interest to regimental officers and others who might be glad of a cheap means of affording instruction to recruits or indifferent shots, or of converting, when required, their '303 sporting weapons into excellent miniature rifles for target or small game shooting.

As the present service rifle has very little recoil, its absence with reduced charges is, I consider, of no practical disadvantage when they are used for instruction. Even a good shot would, I think, derive considerable benefit from the use of reduced charges in keeping himself in training when from any cause he might be unable to use the regular ammunition.

The length and weight of the bullet to be used with reduced charges depends on the work required of it, but it must not be of less than '311 inch diameter. It must also be made of hardened lead in order that it may not strip in the quick twist rifling of the '303.

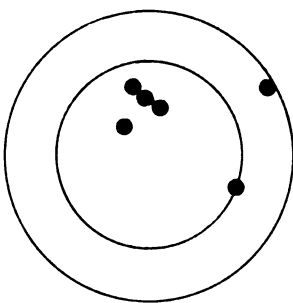
2. In the Winchester '303 rifle of 1895 model which is chambered for '303 Government ammunition and has rifling of a pattern similar to that of the Lee-Enfield, bullets of Martini-Henry lead, $\frac{1}{8}$ tin alloy, shoot with great accuracy, and I have found these same bullets give equally good results with a new '303 Lee-Metford, though they would not shoot accurately in a Lee-Metford which had seen considerable service, the bore of which had probably become enlarged by wear and tear. In this latter rifle the bullets had to be cast of much harder alloy, about $\frac{1}{4}$ tin, and their diameter had to be slightly increased by means of two or three thicknesses of tissue paper inserted in the mould to open it out slightly when the bullet was being cast. It would therefore be safer in preparing reduced charges for the Lee-Metford to use very hard bullets of $\frac{1}{10}$ to $\frac{1}{8}$ tin and perhaps of two or three-thousandths of an inch greater diameter. The Lee-Enfield having angular grooving like the Winchester '303 does exceedingly well with bullets cast of old Martini-Henry lead. The bullets do not lead the barrels if they are properly lubricated and the fouling is slight and easily cleaned.

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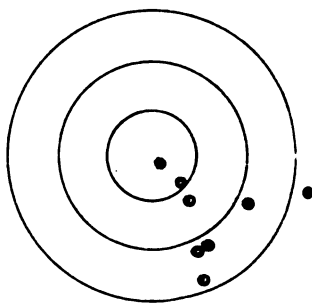
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Reduced charges fired from a .303 Military Lee-Netford Rifle—powder 7 grains Amberite—bullet cast of Martini Henry Lead, $\frac{1}{16}$ tin alloy, hollow pointed with four cannelures lubricated with bees wax. Weight 145 grains, length $\frac{7}{8}$ inch, diameter .311 inch.

Target $\frac{1}{2}$ of actual size 8 shots at 50 yards from a rest. Sight 600 yards.

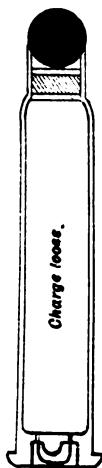


Target $\frac{1}{50}$ of actual size 8 shots at 100 yards (sitting). Sight 600 yards.



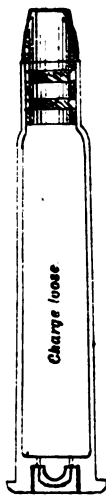
Load A for gallery practice.

5 gra. Nitro powder loose.
Wad of Wax between 2 cards.
Spherical hardened bullet.



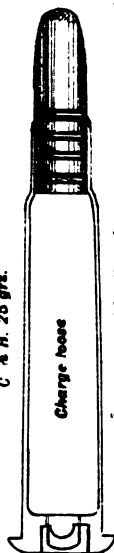
Load B for ranges up to 150 yds.

6 gra. Nitro powder.
.32 Winchester C. F. bullet of hardened lead about 110 gra. weight .311 diameter lubricated with wax.



Load C for longer ranges.

Nitro powder.
Amberite 7 gra.
.450 Riffeite 7 gra.
.303 " 16 gra.
Sliced cordite 10 gra.
Black powder No. 4
C & H. 25 gra.

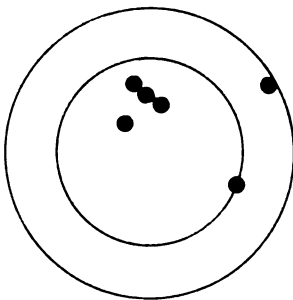


Bullet $\frac{1}{8}$ inch long .311 diameter hardened lead & cannelures lubricated with wax. Weight 160 grains

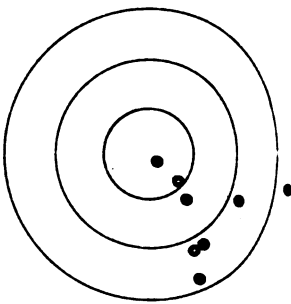
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Reduced charges fired from a .303 Military Lee-Metford Rifle—powder 7 grains Amberite—bullet cast of Martini Henry Lead, $\frac{1}{13}$ tin alloy, hollow pointed with four cannelures lubricated with bees wax. Weight 145 grains, length $\frac{7}{8}$ inch, diameter .311 inch.

Target $\frac{2}{3}$ of actual size 8 shots at 80 yards from a rest. Sight 600 yards.

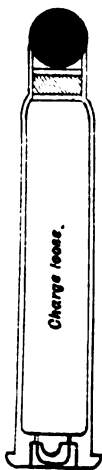


Target $\frac{1}{10}$ of actual size 8 shots at 100 yards (sitting). Sight 600 yards.



Load A for gallery practice.

5 grs. Nitro powder loose.
Wad of Wax between 2 cards.
Spherical hardened bullet.



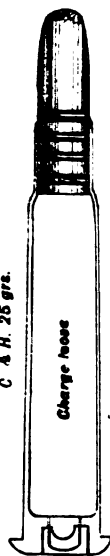
Load B for ranges up to 150 yds.

6 grs. Nitro powder
.32 Winchester C. F. bullet of
hardened lead about 110
grs. weight .311 diameter
lubricated with wax.



Load C for longer ranges.

Nitro powder
Amberite 7 grs.
450 Rifleite 7 grs.
.303
Sliced cordite 10 grs.
Black powder No. 4
C. & H. 25 grs.



Bullet $\frac{3}{8}$ inch long .311 diameter
hardened lead 4 cannelures
lubricated with wax. Weight
100 grains

I have found the following loads give good results.

A.—For Gallery practice.

A spherical bullet of hardened lead, $\frac{1}{18}$ tin, of '311" diameter. Charge 5 grains Schultze shot gunpowder or other similar nitro-powder. With this bullet a gastight wad is required; a wax wad between two cards placed immediately behind the bullet, which is fixed in the mouth of the case, does very well.

This load shoots very accurately at 30 yards, the bullet taking the rifling, and will make a ten shot group of 4 inches in diameter at 50 yards. The sight to be used is from 500 to 550 yards with the rifle, and with the carbine from 375 to 400 yards.

B.—For ranges up to 150 yards.

For these distances a short light bullet is all that is required and I have found that the ".32 Winchester C.F." bullet cast of hardened lead gives excellent results in the '303 at 50 and 100 yards.

The mould used by me is the ".32-20-115" Winchester, obtainable at any gundealers, which casts a bullet '311 inch diameter, with two cannellures for lubrication, weighing, if of Martini-Henry lead, about 110 grains. A good charge is about 6 grains of any suitable nitro-powder. I have obtained good results with Schultze and Amberite shot-gun powders, and with "*Rifleite* '450" rifle powder with this bullet. The powder shakes about loose in the case and no wad is required. The bullet is lubricated with pure beeswax or wax and beef fat mixed. The bullet is fixed in the usual manner in the mouth of the case which is slightly indented to prevent its slipping in or out.

C.—For ranges up to 200 yards and over.

At longer ranges a heavier bullet of from 140 to 160 grains weight gives good results; the bullet used by me is cast in a mould made for me by Manton and Company; its length is $\frac{7}{8}$ inch and it has four cannellures for lubrication. Its weight cast solid of Martini-Henry lead is 160 grains and 145 grains if cast with a hollow point. It gives excellent shooting with the following loads which I have tried:—

Amberite, 7 grains.

Rifleite '450, 7 grains.

Rifleite '303, 15 grains.

Sliced cordite, 10 grains.

No. 4 C. and H. Black gunpowder, 25 grains.

The cartridge is loaded in the same manner as in load B.

The elevation for 100 yards is 550 yards with the above charges.

I append diagrams of the targets made with various reduced charges in the '303 rifle, which show that sufficiently accurate work can be done with them.

The 15 grain charge of slow burning '303 Rifleite is a fairly powerful one and shoots excellently at 200 yards. The increased elevation necessary with reduced charges is due to the comparative absence of flip. With the service rifle aim has to be taken about 6 inches to the left at 200 yards as the foresight is placed slightly to the left of the centre of the barrel and the reduced charge requires central sighting.

The refilling of cartridges is a simple matter.

The Decapping cases.—The cap or primer is extracted by means of a bradawl sharpened specially for the purpose. The empty case to be decapped is placed in a hole of suitable size in a block of hard wood or table. The bradawl is placed with its point in the centre of the primer, the blade at an angle of 45° and is given a sharp tap with a mallet.

The primer is then extracted by a turn of the wrist.

Cleaning cases.—The cases after being decapped should be thoroughly well cleansed with soap and soda in warm water and afterwards thoroughly dried in the sun.

Resizing cases.—Cases that have been used with the full service charge should be resized in a die before being refilled. They very seldom require resizing after the first time if used with reduced charges. The die should be slightly oiled to prevent cases sticking. Cases refilled with reduced charges may be used dozens of times as the pressure is very small.

Recapping cases.—A recapping tool for the '303 can be had from any gun-dealer. The recapper in the American '450, '455 or '44-40 *Ideal* revolver loading tool fits the '303 cartridge, and I use it for recapping these cases. The '303 *Government cordite primer* must be used.

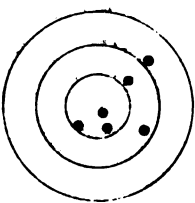
Casting bullets, etc.—To cast good bullets the mould should be ventilated, one or two channels being cut with a file for the purpose. The molten lead should be kept stirred up to mix the alloy properly before casting. The *Ideal* melting pot and dipper are very useful for casting bullets. To lubricate the bullets they may be dipped up to the top cannellure in melted wax. An old cartridge case with the base filed off makes a useful implement for scraping off the surplus lubrication. It is pushed on to the bullet which is placed base down upright on a table, the bullet is pushed out base first with a short stick.

Filling cases.—The powder charge can be measured in a cup made to hold the proper quantity and placed in the cartridge through a funnel. Charge cups can be made out of old cartridge cases with wire handles soldered on.

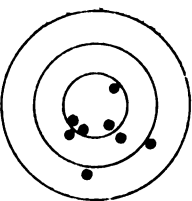
The cartridge after refilling should be well wiped to clean off surplus lubrication and dirt with a slightly oiled rag. The bullet should be fixed by slightly indenting the mouth of the case with a blunt pointed bradawl or nail which will not pierce the metal. It is as well to gauge all the refilled cartridges in the chamber of a rifle to prevent jamming, etc., during practice.

Diagrams made with reduced charges; 160 grain solid or 145 grain hollow pointed bullet in .303 Winchester Rifle.
 Dimensions of targets (Scale $\frac{1}{16}$).

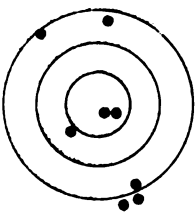
Bulle-eye 8 inches, Rings 6 and 9 inches.



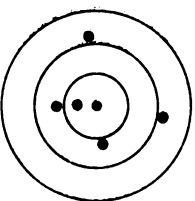
7 gr. Anheuser 100 yards.
8 shots.



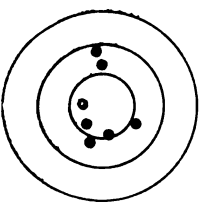
7 gr. 450 Riggite 100 yards.
8 shots.



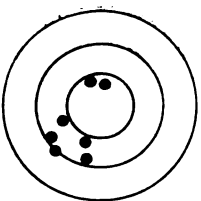
7 gr. 450 Riggite 150 yards.
8 shots.



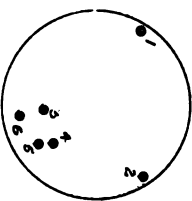
25 gr. Black Powder No. 4 Q. & M.
8 shots.



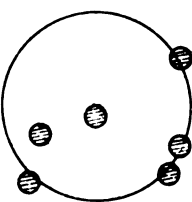
15 gr. 303 Riggite 100 yards.
8 shots.



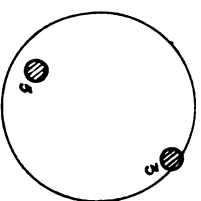
10 gr. Silead Cordite 100 yards.
7 shots.



Lee Metford Rifle.
10 gr. Schultze. Bullet Cast
in .32 Winchester G. F. mould
Ketch, weight about 110 grs.
Sight 500 yards.
Distance 100 yards. 6 shots.
Scale 78.



Lee Metford Rifle.
5 gr. Schultze spherical
hardened bullet 44 grains.
Distance 50 yards. 6 shots.
Scale half size.



Winchester 303 Rifle.
6 gr. 450 Riggite .32 Winchester
C. F. bullet, 110 grs.
Distance 50 yards. 6 shots.
Scale half size.



The Ideal Manufacturing Company (Newhaven, Connecticut, United States, America) make a variety of loading tools for rifles and pistols of every calibre including the '303 rifle and '455 and '450 revolver.

They make moulds for various bullets of '311 inch diameter suitable for '303 rifles, and their *Handbook* gives many valuable tips for reloading all kinds of ammunition.

The cost of refilling with reduced charges is very trifling. One pound of powder in 7-grain charges will refill 1,000 cases. The cost of lead is trifling and the primers are not very expensive. Men could easily be taught to refill ammunition and it would give them a useful and interesting occupation for their leisure hours. I think the short range ammunition would be very suitable for regimental rifle clubs, etc, on account of its cheapness. In cost and accuracy it compares favourably with Morris tube ammunition and does not increase the weight of the rifle or alter its balance as the Morris tube does.

SOME FOREIGN ARTICLES OF SPECIAL INTEREST

(CONTRIBUTED BY THE INTELLIGENCE BRANCH).

The Transport of the East Asian Expeditionary Corps.

TRANSLATED FROM THE "MILITAR WOCHENBLATT"

On the 7th July, 1900, the Emperor gave orders for the formation of an expeditionary corps to consist of volunteers from the army and to be composed of 8 battalions of infantry, 3 squadrons of cavalry, 4 battalions of field artillery with the necessary complement of ammunition columns, transport, etc.

On the 10th July the staff were able to report to the commander of the expeditionary corps that the formation of the various units was completed, and between the 27th July and the 4th August the expeditionary corps constituted as under:—

500 officers and officials,

10,874 non-commissioned officers and men,

559 guns and vehicles,

21,204 cubic yards of stores,

embarked on ten steamers.

On the 12th August, 1900, a reinforcement consisting of—

279 officers and officials,

7,430 non-commissioned officers and men,

303 guns and vehicles,

19,841 cubic yards of stores,

was formed, and embarked on eight steamers between the 31st August and 7th September.

The transport by sea of such a large body of troops was quite a new experience for Germany. Everything had to be improvised, as there were no previous preparations nor precedents to work on. It is true that as an experimental measure it was intended during the Imperial manoeuvres in 1900 to transport a mixed brigade consisting of four battalions, one squadron and a battery, from Dantsing to Sam-mund, and with this idea in view, regulations for the movement of troops by sea were about to be framed. However the sudden turn of

events in China, and the unforeseen necessity of quickly despatching a strong force, to that quarter, put an end to all experimental measures and necessitated hasty action.

The arrangements for carrying out the transport was entrusted to both the military and naval authorities and no exact data was laid down with regard to their respective duties, as it was impossible to distinguish between the two interests.

In order to quickly transport a large force across the sea the most important factor is the possession of a good mercantile marine, and in this respect Germany was fortunate in having at its disposal the two largest steamship companies in the world, *vis.*, the North German Lloyd and the Hamburg-America Packet Company.

The military and naval authorities, in conjunction with representatives from the two companies, made the necessary arrangements for the combined transport and after personal inspection agreed to the following conditions.

The following were the requirements demanded in each transport :—

1. The companies had to provide the following accommodation :—

- (a) All field officers and those above that rank and officials of corresponding rank, with a completely furnished cabin, which was to contain a commodious chest of drawers, provided with locks and writing table.
- (b) All other passengers in the first saloon, as far as possible with a completely furnished cabin (eventually three and four people had to share one cabin).
- (c) For second saloon passengers a cabin for every two or four and a common mess-room.
- (d) The passengers between-decks with bunks in a separate place between-deck, with sufficient portholes and good ventilation.

2. The cabins contained the following: a strong bunk for each individual, and, as far as possible, a washhand stand and camp chair for each passenger. The bedding consisted of a horse-hair mattress, a horse-hair pillow, two woollen blankets with linen or cotton sheets, a counterpane and a pillow-case.

3. For the disposal of valuables, uniform, etc., each saloon passenger was to be provided, as far as possible, with a chest and lock; valuables could be handed over to the paymaster for safe custody, on the understanding that the company would be responsible for any damage or loss.

4. All the cabins, etc., in the saloons and between-decks were to be provided with hot-water pipes.

The 15 grain charge of slow burning '303 Rifleite is a fairly powerful one and shoots excellently at 200 yards. The increased elevation necessary with reduced charges is due to the comparative absence of flip. With the service rifle aim has to be taken about 6 inches to the left at 100 yards as the foresight is placed slightly to the left of the centre of the barrel and the reduced charge requires central sighting.

The refilling of cartridges is a simple matter.

The Decapping cases.—The cap or primer is extracted by means of a bradawl sharpened specially for the purpose. The empty case to be decapped is placed in a hole of suitable size in a block of hard wood or table. The bradawl is placed with its point in the centre of the primer, the blade at an angle of 45° and is given a sharp tap with a mallet.

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Recapping cases.—A recapping tool for the '303 can be had from any gun-dealer. The recapper in the American '450, '455 or '444 *ideal* revolver loading tool fits the '303 cartridge, and I use it for recapping these cases. The '303 *Government cordite primer* must be used.

Casting bullets, etc.—To cast good bullets the mould should be ventilated, one or two channels being cut with a file for the purpose. The molten lead should be kept stirred up to mix the alloy properly before casting. The *ideal* melting pot and dipper are very useful for casting bullets. To lubricate the bullets they may be dipped to the top cannellure in melted wax. An old cartridge case with the base filed off makes a useful implement for scraping off the surplus lubrication. It is pushed on to the bullet which is placed base down upright on a table, the bullet is pushed out base first with a short stick.

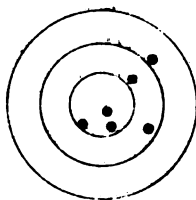
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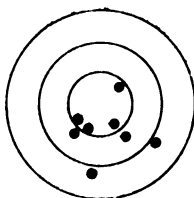
Diagrams made with reduced charges; 160 grain solid or 145 grain hollow pointed bullet in .303 Winchester Rifle.

Dimensions of targets (Scale $\frac{1}{16}$).

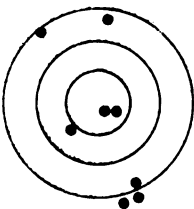
Bulls-eye 3 inches, Rings 6 and 9 inches.



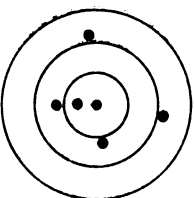
7 gr. Amherstite 100 yards.
8 shots.



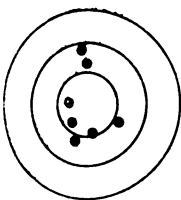
7 gr. .450 Riffelite 100 yards.
8 shots.



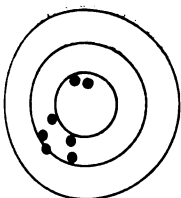
7 gr. .450 Riffelite 150 yards.
8 shots.



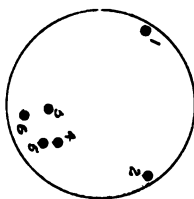
25 gr. Black Powder No. 4 Q. & M.
8 shots.



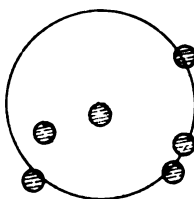
15 gr. .303 Riffelite 100 yards.
8 shots.



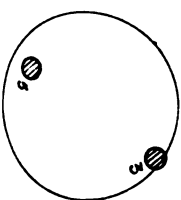
10 gr. Allied Cordite 100 yards.
7 shots.



Lee Metford Rifle.
10 gr. Schmitz. Bullet Cast
in .32 Winchester G. F. mould
Astin, weight about 110 grs.
Sight 800 yards.
Distance 100 yards. 6 shots.
Scale 75.



Lee Metford Rifle.
5 gr. Schmitz spherical
Amherst bullet 44 grains.
Distance 30 yards. 6 shots.
Scale half size.



Winchester .303 Rifle.
8 gr. .450 Riffelite .32 Winchester
G. F. bullet, 110 grs.
Distance 50 yards. 6 shots.
Scale half size.



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TRANSLATED FROM THE "MILITAR WOCHENBLATT"

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On the 19th July the staff were able to report to the commander of the expeditionary corps that the formation of the various units was completed, and between the 27th July and the 4th August the expeditionary corps constituted as under :—

500 officers and officials,
10,894 non-commissioned officers and men,
559 guns and vehicles,
21,294 cubic yards of stores,
embarked on ten steamers.

On the 12th August, 1900, a reinforcement consisting of—

269 officers and officials,
7,430 non-commissioned officers and men,
303 guns and vehicles,
18,241 cubic yards of stores,
was formed, and embarked on eight steamers between the 31st August and 7th September.

The transport by sea of such a large body of troops was quite a new experience for Germany. Everything had to be improvised, as there were no previous preparations nor precedents to work on. It is true that as an experimental measure it was intended during the imperial manœuvres in 1900 to transport a mixed brigade consisting of four battalions, one squadron and a battery, from Dantzic to Swinemund, and with this idea in view, regulations for the movement of troops by sea were about to be framed. However the sudden turn of

events in China, and the unforeseen necessity of quickly despatching a strong force, to that quarter, put an end to all experimental measures and necessitated hasty action.

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The following were the requirements demanded in each transport:—

1. The companies had to provide the following accommodation:—

- (a) All field officers and those above that rank and officials of corresponding rank, with a completely furnished cabin, which was to contain a commodious chest of drawers, provided with locks and writing table.
- (b) All other passengers in the first saloon, as far as possible with a completely furnished cabin (eventually three and four people had to share one cabin).
- (c) For second saloon passengers a cabin for every two or four and a common mess-room.
- (d) The passengers between-decks with bunks in a separate place between-deck, with sufficient portholes and good ventilation.

2. The cabins contained the following: a strong bunk for each individual, and, as far as possible, a washhand stand and camp chair for each passenger. The bedding consisted of a horse-hair mattress, a horse-hair pillow, two woollen blankets with linen or cotton sheets, a counterpane and a pillow-case.

3. For the disposal of valuables, uniform, etc., each saloon passenger was to be provided, as far as possible, with a chest and lock; valuables could be handed over to the paymaster for safe custody, on the understanding that the company would be responsible for any damage or loss.

4. All the cabins, etc., in the saloons and between-decks were to be provided with hot-water pipes.

5. The men's bunks were to be numbered consecutively. For every two bunks two to three hooks were to be provided for hanging clothes.

6. All the bunks not actually required for the accommodation of the men were to be removed, and tables and forms put in their place. In addition, the companies had to provide a number of tables and benches for use on deck. All the tables between decks were to be numbered consecutively, showing also the ship's numbers of the men for whom they were intended, for example :—

No. I Mess.

No. II Mess.

Nos. 1—12.

Nos. 13—24.

The electric lights between-decks were to be provided with screens to keep the glare off the bunks.

7. To provide against accidents, broad gangways were to be made leading from below to the deck.

8. Each porthole was to be provided with a scuttle, and at each hatchway windsails in the following proportion :—

(a) In the lower troop deck : One windsail for every 200 cubic metres of space occupied by men : for every 200 to 400 cubic metres, two windsails; for over 400 cubic metres, three windsails.

(b) In the upper troop deck : For space up to 300 cubic metres occupied by men, one windsail; over 300 cubic metres, two windsails.

9. Arm racks were to be provided in places not occupied by the troops and were to be numbered consecutively, and on the wall above each rack the contents of each was to be shown, as, for example, Nos. 40—57.

10. Special cabins were to be set apart for the storing of officers' and men's kits. Each officer and man was to be allowed 3 cubic metres and 1 cubic metre of space respectively, which was to be accessible during the voyage.

Special places were to be set apart as saddle and harness rooms, which were also to be accessible during the voyage.

11. Shelves on the walls over the mess-tables for the storing of eating utensils, as well as plates, knives, books, etc., were to be provided by the companies.

12. The companies were to provide utensils for the purpose of cleaning cooking pots, etc., as well as soap, dish-cloths, etc.

13. There were to be from one to two cabins set apart on each steamer for use as offices; these cabins were to be provided with locks.

14. There was to be a hospital on each ship capable of accommodating 2½ per cent. of the troops on board; a bathroom and latrine was

to be attached to the hospital. The hospitals were to be supplied with heating apparatus and were to be airy and well lighted. There was to be, as far as possible, sitting accommodation for non-lying down patients, and also a table in each hospital.

On the doctor's requisition, all the hospital washing was to be done gratis by the ship.

15. Every precautionary measure was to be taken by the companies for the extinction of fire. A sufficient number of boats, life-buoys (including a night life-buoy) and material for the construction of rafts was to be provided. Life-belts were supplied for the troops.

16. The companies were to arrange for one steam-launch per transport; the "Rhein" was to have two.

17. The upper decks were to be sheltered by awnings, and were to be kept free of all baggage or stores.

18. Clothes-lines were to be provided for the purpose of drying the men's washing.

19. Latrines were to be provided in proportion to the strength of the troops, and arrangements made to have them disinfected and cleaned daily.

20. Each ship was to be provided with one or two post boxes.

21. Each ship was to have three places specially set apart to serve as military prisons.

In addition the terms of the contract laid down clearly all the details with regard to the interior economy of the ship, including the prices of stores, the care of the sick, the length of stay at the port of disembarkation, etc. It will thus be seen that the troops were to be considered by the ship's authorities solely in the light of passengers. The officer commanding the expeditionary corps was also empowered to detain any ship, after the troops and stores had been disembarked, for any such period that he might consider necessary with regard to the military situation. Every ship was to be provisioned for 150 days and at the end of the voyage any surplus provisions were to be at the disposal of the commissariat department. The embarking of stores and materials at the port of embarkation had to be arranged for by the companies, while at the port of disembarkation they were only required to provide their steam-launches to assist in the disembarkation.

On the 13th July, 1900, the Ministry of War issued the necessary detailed orders for the despatch of the East Asian Expeditionary Corps, amongst which we may mention the following:—

- (1) As it was considered expedient that all the transports should sail from one German port, so as to admit of greater unity of action in the embarkation arrangements, Bremerhaven was selected as the port of embarkation. In coming to this decision, as a matter of course, only Bremerhaven and

Hamburg were taken into consideration, as these were the headquarters of the two steamship companies which had to make all the necessary arrangements for the fitting up and loading of the transports. Of these two ports Bremerhaven appeared more suitable than Hamburg, with its enormous trade and its extensive docks, not only on account of its more compact harbour admitting easier supervision and simplifying the necessary arrangements, but also on account of its more complete railway communications, which facilitated the transport of troops and stores to any selected wharf or quay, and there would also be a lesser crowd of sightseers to interfere with the progress of work.

One objection to the selection of Bremerhaven as the one port of embarkation was that the resources of the Hamburg-American line as regards dock hands, labour, etc., could not be fully utilised; however the Lloyd Company undertook to load the Hamburg steamers by means of its own *personnel*.

(2) With regard to the actual embarkation the following orders were issued :—

(a) The staff troops, etc., carts, ammunition, as well as all the baggage which the troops would require in their immediate possession, such as officers' kits and men's kits, were to go by rail to Bremerhaven.

(b) All other stores, etc., were to be sent to the Bremen Waser railway station and be there shipped on to lighters and sent alongside the transports at Bremerhaven. This important arrangement was at the express wish of the Lloyd Company so as to admit of the simultaneous loading of the transports from the wharves and from the lighters in the short time at their disposal. By this means the ordinary traffic was not greatly interfered with : all possible advantage was taken of Bremen's resources as regards labour and store sheds, which are lacking in Bremerhaven ; it was also possible to make simultaneous use of the cranes on the ships and on the wharves.

With regard to the loading of the transports, from a military point of view, two main principles were laid down : *Firstly*, the complete field equipment of every unit, *i.e.*, arms, ammunition, uniform, transport, etc., was to be carried on the same ship as the unit itself, and in addition a sufficient supply of stores, etc., to last for some time after disembarkation, so that in the event of only one ship being unloaded at a time, the unit would be in every way complete. *Secondly*, all stores, etc., were to be stowed on each ship in the order that they would be required ; all reserve stores at the bottom of the hold, and those that would be first required at the top ; also all the component parts of different stores were to be stowed together, and all stores stowed together according to the respective units to which they belonged.

This latter principle proved difficult, almost impossible, to carry out, owing to the extreme difficulty of separating reserve stores, etc., from other stores before embarkation, therefore the military authorities decided to send all the heavy baggage not apportioned to any particular unit, such as reserve provisions, etc., to Bremen.

The authorities came to this decision because it was found impossible in the short time available to stow everything systematically, and in the order that it would be required, and without also sacrificing a great amount of space. The stores, etc., would also, in any case, require to be sorted at the port of disembarkation, and therefore the advantages gained by shipping them in lighters to Bremen appeared to be dubious.

However, in order to ensure the troops having their most important necessities immediately at hand, both during the voyage and on disembarking, it was decided that the officers' baggage and men's kits were to accompany the troops to Bremerhaven, and that all other stores, such as ammunition, medicine chests, and hospital carts, were to be stowed on board immediately, and where every access would be had to them.

- (3) In order to facilitate the loading and unloading of the transports all stores were to denote what ship and what corps they were destined for and also the contents of all packed stores was to be denoted on the outside.
- (4) Dépôts were formed at Bremen and Bremerhaven, each under the command of a railway commandant, with a staff of officers, officials and men, where all the stores, baggage, etc., arriving by train were stacked and arranged.

The Bremen dépôt included the railway station staff, a collecting station, a clothing dépôt and goods dépôt, and in addition a dépôt where all gifts intended for the troops were collected.

The Bremerhaven dépôt included the railway station staff, an ammunition and a goods dépôt. These dépôts had the same duties in connection with them as they would have on mobilisation.

An embarking staff was formed at Bremerhaven, the senior officer of which had charge of the embarkation of troops.

The regulations with regard to the distribution of the troops were embodied in the "Plan for the embarkation of the East Asian Expeditionary Corps," which was made use of, in slightly altered form, for the second despatch of troops. The number of 1st, 2nd and 3rd class passengers that each transport had to carry was fixed beforehand. Owing to the long voyage through the tropics, the hardships of which our troops were unaccustomed to, and the necessity of disembarking the expeditionary corps in the best possible health, the troop decks were only to accommodate 75 per cent. of their normal complement, which proved a very wise precaution. The distribution of the troops presented many difficulties, as the different units and their equipment stores had absolutely to be together and materially the

steamers were not constructed to meet this contingency. It thus happened that some ships had plenty of accommodation for the men but very few cabins and others had plenty of cabins but very little space between-decks, whilst some were cargo ships and had comparatively small accommodation for passengers.

It is not intended to imply that the companies supplied inferior or unsuitable ships as transports; on the contrary, the ships were excellent, perhaps better than any ever provided for this purpose before, but owing to the suddenness of the demand and the large number required, it was impossible to have a large choice, and those ships had to be taken which happened to be in port. As a consequence, extensive alterations and fittings had to be made, such as the construction of cold stores for fresh provisions, gangways, the laying down of electric light, hot water pipes, etc. By means of such alterations it was proved that any good ship can be converted into an efficient transport.

Three fast ships were selected to sail first and left on the 27th of July with the following troops, etc., on board :—

Staff of 1st infantry brigade.

1st infantry regiment.

Staff and two squadrons of cavalry (as the horses were being despatched direct to China from America and Australia and would arrive there before the troops, it was especially desirable that the latter should arrive as early as possible).

Second section of the field artillery regiment. A battery of heavy field howitzers (whose early arrival enabled it to take part in the storming of the Peitang forts).

Detachment of the Telegraph Corps.

Field hospitals 1—4.

The officer to command on the lines of communications and all the "technical" troops went by the first ship in order to be able to assist in the disembarkation arrangements. An advance party consisting of 21 officers, officials, etc., and 120 men, had left Genoa on the 24th July in order to make the primary arrangements.

The commander of the expeditionary corps, whose early arrival on the scene of operations was very desirable, could not leave for very important reasons until the 2nd of August, but the "Rhine," which steams 13 knots and on which he travelled, did the journey in the shortest possible time by avoiding all unnecessary delays at the intermediate ports.

The embarking officers and their staff started on their work in Bremen on the 12th of July. Their duties consisted in sorting all the baggage and seeing that it was properly packed and labelled; badly packed things had to be repacked and those incorrectly labelled had

to be put right. All the baggage had then to be shipped on to the different lighters and despatched in good time to their respective ships in Bremerhaven. Some idea of the extent of work that was done may be judged from the fact that between the 12th and 30th of July 7,270 tons of stores, etc., arrived at the Weser railway station in 1,419 trucks.

The railway station staff at Bremerhaven had similarly to transport all the carts, ammunition, etc., alongside the quay. The arrangements for loading were rendered all the more difficult on account of the fact that all available space had to be utilised in order to stow away all the stores, etc. As much heavy baggage as possible was to be stowed away in the hold, and at the same time sufficient space was to be left for the transport, tents, stores, etc., which were to accompany the several units, and the space required for these latter could only be approximately estimated.

As far as possible all stores, etc., were brought alongside the steamers in the order that they would be stowed on board, but this measure was only partly a success, as in many cases there was not room for them and they had to go on the next steamer.

The difficulty of loading was very much increased by rainy weather, and also by the late arrival of a number of the ships; originally the 1st August had been fixed as the first day of sailing, and the companies had made their arrangements accordingly and when all the dates of sailing were altered to five days earlier, it was in many cases too late to alter the original plans. In some cases ships had only two days in which to unload their original cargo, make the necessary fittings for the transport of troops and to load up. The embarkation of the troops was carried out under the direction of officers of the headquarters staff. As soon as each train drew up on the platform in front of the ship, all the companies were formed up and each man was given a number showing the number of his bunk and his arm-rack. The men were then marched on board, and the packs stowed in their bunks and the rifles in the arm-racks. In the meantime a party of marines unloaded the train and all the remaining officers and men's kits were laid out on the quay; each man then searched for his own kit bag and took it on board and stowed it away. The embarkation of a battalion took on an average from an hour to an hour and-a-half.

On the whole it may be said that the transport arrangements for the expedition were satisfactory: the health of the troops during the 48 days' voyage through the tropics in the hottest time of the year was excellent. There were only 7 deaths *en route*, viz.:—

- 2 from sunstroke.
- 1 „ peritoneal inflammation.
- 1 „ apoplexy.
- 1 „ fracture of the skull.
- 2 „ alcoholism.

Prize Essay Gold Medallists.

- 1872.....ROBERTS, Lieut.-Col. F. S., V.C., C.B., R.A.
 1873.....COLQUHOUN, Capt. J. A. S., R.A.
 1874.....COLQUHOUN, Capt. J. A. S., R.A.
 1879.....ST. JOHN, Maj. O. B. C., R.E.
 1880.....BARROW, Lieut. E. G., S.C.
 1882.....MASON, Lieut. A. H., R.E.
 1883.....COLLEN, Maj. E. H. H., S.C.
 1884.....BARROW, Capt. E. G., S.C.
 1887.....YATE, Lieut. A. C., S.C.
 1888.....MAUDE, Capt. F. N., R.E.
 YOUNG, Maj. G. F., S.C. (specially awarded a silver medal).
 1889.....DUFF, Capt. B., S.C.
 1890.....MAGUIRE, Capt. C. M., S.C.
 1891.....CARDEW, Lieut. F. G., S.C.
 1893.....BULLOCK, Maj. G. M., Devonshire Regt.
 1894.....CARTER, Capt. F. C., Northumberland Fusiliers.
 1895.....NEVILLE, Lieut.-Col. J. P. C., S.C.
 1896.....BINGLEY, Capt. A. H., S.C.
 1897.....NAPIER, Capt. G. S. F., Oxfordshire L. I.
 1898.....MULLALY, Maj. H., R.E.
 CLAY, Capt. C. H., S.C. (specially awarded a silver medal).
 1899.....NEVILLE, Col. J. P. C., S.C.
 1900.....THUILLIER, Capt. H. F., R.E.
 LUBBOCK, Capt. G., R.E. (specially awarded a silver medal).
 1901.....RANKEN, Lieut.-Col. G. P., S.C.

MacGregor Memorial Silver Medallists.

- 1889.....BELL, Col. M. S., V.C., R.E. (specially awarded a gold medal).
 1890.....YOUNGHUSBAND, Capt. F. E., K. Dn. Gds.
 1891.....SAWYER, Maj. H. A., S.C.
 RAMZAN KHAN, Havildar, 3rd Sikhs.
 1892.....VAUGHAN, Capt. H. B., S.C.
 JAGGAT SINGH, Havildar, 19th P. I.
 1893.....BOWER, Capt. H., S.C. (specially awarded a gold medal).
 FAZALDAD KHAN, Dafadar, 17th B. L.
 1894.....O'SULLIVAN, Maj. G. H. W., R.E.
 MULL SINGH, Sowar, 6th B. C.
 1895.....DAVIES, Capt. H. R., Oxfordshire L. I.
 GUNGA DYAL SINGH, Havildar, 2nd Rajputs.
 1896.....COCKERILL, Lieut. G. K., S. C.
 GHULAM NABI, Private, Q. O. Corps of Guides.
 1897.....SWAYNE, Capt. E. J. E., S. C.
 SHAHZAD MIR, Dafadar, 11th B. L.
 1898.....WALKER, Capt. H. B., Duke of Cornwall's L. I.
 ADAM KHAN, Havildar, Guides Infantry.
 1899.....DOUGLAS, Capt. J. A., S. C.
 MIHR DIN, Naik, Bengal S. and M.
 1900.....WINGATE, Capt. A. W. S., S. C.
 GURDIT SINGH, Havildar, 45th Sikhs.
 1901.....BURTON, Major E. B., S. C.
 SUNDER SINGH, Colr. Havildar, 31st Burma Infantry.

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THE TRAINING AND EQUIPMENT OF CAVALRY AND MOUNTED INFANTRY IN INDIA, AND THEIR RES- PECTIVE RÔLES IN WAR.

BY CAPTAIN H. H. F. TURNER, 2nd Bengal Lancers.

Motto.—Virtute et Labore Nihil Obstat.

Before venturing to approach the portion of the subject of which this essay treats relating to equipment, it would be well to endeavour to clearly appreciate the rôles which cavalry and mounted infantry, respectively, are designed to fill, and towards which training and equipment are but as the means to an end.

At all periods of the history of war the possession of correct information and reconnaissance. information concerning the enemy, his strength, his *morale*, his character, his intentions, his movements, and his position, has been of superlative value, and has increased the chances of victory a hundredfold in favour of the side best served in this important respect.

The range and accuracy of modern firearms has rendered the reconnaissance of an enemy, particularly if occupying a position, a duty of the utmost difficulty and danger, and for the efficient execution of which an altogether exceptional training is requisite. Intelligence of a very high standard is necessary, and cunning of a type which natural aptitude for the work and wide experience can alone engender. Horsemanship of a finished description is essential, and likewise a class of mount on the speed and endurance of which reliance can be placed, to enable isolated patrols or individuals, endeavouring to elude the vigilance of the enemy's screen, to effect their escape with the information gleaned.

J—A

The rôle of the scout is not a fighting rôle ; it is a rôle entailing skill in horsemanship, address and resource, bred of courage and experience, a highly developed intelligence, and familiarity with an open-air life. It is work in which the numbers employed have no direct relation to the probable value of the service performed, in which a pair of men are more likely to be successful than a whole troop, in which fire action bears no part.

Scouting.

It is a cavalry rôle *par excellence*.

The part of the scout is a part for which every cavalryman should be trained, but for which, relatively, few are fitted. Considering the vital importance of accurate information, should not these few be specially selected and trained, a small body of squadron scouts to whom every inducement and encouragement be given by constant practice, instruction, and the bestowal of small advantages, to fit themselves for the part, which they should be taught to consider a proud one, of information-getters for the army.

The present system of instruction at squadron training and long reconnaissance is sufficient to inform the men roughly in scouting duties, but it is not to the large bodies of patrols advancing accurately in touch of one another (as the Drill Book evidently realises) to which a leader can look for information of value, apparent as their presence and design are to every man of the enemy's screen, but to the highly trained few, who can in isolated groups, pairs, or singly, by the ways known to the poacher or the gamekeeper, to the frontier raider or the *shikari*, elude detection and steal what the enemy's vedette is posted to guard.

The training of his animal must be the care of the scout himself; the training of the man will exercise all the keenness and skill of a specially selected officer.

Horses must be chosen of suitable speed and temper, trained to lie down or remain untended; to stand motionless whilst the rider observes or sketches; horses not prone to neigh or fidget when alone.

The first step towards the development of self-reliance and resource is to frequently remove a man from the constant control and supervision of superiors, whose business it is to think for him, and whose zeal gradually reduces an intelligent human being to the level of a brainless, unreasoning machine. The constant despatch of men, singly or in pairs, out into the district, on some specific errand of two or three days' duration, with orders to reconnoitre and report on some tract of country, the crossings of a river, the possibilities of a position, or the supplies procurable at a village, tends to draw them out and sharpen their wits.

It is surprising how the latent intelligence of individuals, previously believed stupid, thaws and expands when the necessity arises of exercising their own faculties, atrophied and enervated as they appear

to be through long-standing disuse. There can be little doubt but that our present general training in reconnaissance is inadequate under modern conditions to obtain the information on which all depends, and that men, experts in the work, are absolutely necessary for the purpose.

Of men so trained will officers' patrols be composed, and those small bodies, the smaller the better, to which the Regulations rightly maintain, "great independence must be accorded."

It is not desired in any way to diminish or do away with the training which a cavalry regiment generally already obtains in the important duty of reconnaissance, but to urge that that system does not go far enough, and affords little opportunity of taking advantage of the small band of men existing in every regiment who are born scouts, and on whose intelligence and efforts reliance will be placed to penetrate "the fog of war," rather than on the ruck of men who perfunctorily perform duties for which they have little aptitude, insufficient intelligence, and no particular inclination.

A useful practice might be added to the long reconnaissance of a cavalry regiment by commissioning the men, especially trained in scouting, to penetrate the screen concealing the movements of the remainder of the regiment, and to report accurately on the disposition and apparent intentions of the main body in rear, and to effect this undetected.

The introduction of the New Inter-Regimental Cavalry Reconnoitring Competition should do much towards inculcating a practical system of reconnaissance. A patrol of roughly twenty individuals moving towards an objective, fifty miles distant, sketching and reporting as they go, over a strip of country laterally five miles in extent, despatching men in pairs, or single scouts, on specific errands to either flank as the patrol progresses, rallying for defence against parties of the enemy, not greatly superior in numbers, travelling as lightly as possible, with no transport but two packhorses. It is stated that the practice has been suggested by experience gained in the Boer war.

A point which is apt to suggest itself is, that the patrol has been given practically a fair field. It can apparently proceed upon its specific errand under no apprehension of being observed, tracked, harassed, and eventually checked by the concentrated parties which the enemy have doubtless despatched with a similar object in view, and by the cordon, mustering far more than twenty, which he has formed to conceal his dispositions from the prying enterprise of such patrols as the competition provides for. The necessity for the concealment of its operations appears insufficiently emphasised. As an exercise in sketching and reporting on regulation lines, or for developing an eye for country, and individual intelligence, in many directions, it should do much; but it may be argued that as at present devised, it is more an exercise for the staff officer exploring, in comparative confidence and security, a tract of country which is to constitute a theatre of operations in the near future, than for the scout

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who realises the risk of his errand and trusts to his skill in eluding observation, mainly, if not entirely, for its success.

Unable to afford time for the systematic collection of intelligence, much of which may not be indispensable, and for extensive sketching, which presents many difficulties in an enemy's country, the scout, either alone or with a comrade or two, moves by devious ways avoiding observation, to the vicinity of his objective, noting any facts of conspicuous importance no doubt, as he travels, but engaging in nothing approaching a sketch and report of the country passed through. On nearing his objective his vigilance increases; he watches continually, notes a great deal and sketches to some extent when opportunity offers, knowing and feeling that sharp eyes and ready bullets are not lacking for his kind, and that hard riding and a cool head can alone extricate him if detected.

This likewise is a lesson from South Africa—a lesson learned from the "watchers," sometimes colonials, often Kaffirs, who would dog a commando or shadow a laager for days, generally working in pairs and sending in word when necessary at nightfall. Throughout, our methods of procuring information commend themselves as too large and too bold for modern requirements.

Wellington in the Peninsula employed single officers and individual scouts to hover on the skirts of the enemy's columns, count their numbers, and note the direction of their march. In these days the task is a more difficult one, but certainly when acting against a civilised foe an easier one for small independent units than for large patrols.

The methods of General Fitz Hugh Lee, in the civil war in America are worthy of consideration. "My own experience taught me," he writes in a letter to Colonel Denison, dated April 31st, 1868, "to select a small body of men taken from the regiments in which they could be found; they hovered in squads of two or three on the flanks, front, and, rear of the enemy, and promptly and accurately reported his every movement. I found that twenty-five resolute men, scattered in the way I have described, could always keep one supplied with much necessary information."

The opportunities for shock tactics are occasional, those for scouting are ever recurrent; the former may accomplish much, without the latter nothing can be accomplished, and all is likely to be lost. Thus the first and all-important duty of cavalry is to obtain information.

The combination of the reconnoitring idea with that of the screen which our system attempts, appears an impossibility. True, a somewhat similar system was in use in the Franco-Prussian war, but the French cavalry were held for the most part in masses, and the German reconnoitring patrols met with few difficulties in attaining their object. The screen is useful to conceal our own movements from the enterprise of small parties of the enemy, but hardly a likely means of obtaining information of a kind on which the strategy of a campaign can be based.

Mounted infantry cannot be considered suitable for the reconnoitring rôle as compared with cavalry. The mounted infantryman's primary *raison d'être* is the conveyance of fire, and a preponderance of it, to the critical point at the decisive moment. Where the fire is required there should the mounted infantry be gathered, and fire action may be said to be about the last requisite of effectual reconnoitring. The number of rifles brought to bear has a serious significance as regards the utility of mounted infantry, whilst the numbers employed may but affect adversely the success of a reconnaissance. The training of mounted infantry should tend to impress the point that numbers acting in concert have a direct influence on the success of the operations of their arm, the cavalry reconnoiterer be taught to realise that to be alone or with one comrade offers the best augury for the acquisition of valuable and undetected information.

Again, the cob of 14 hands or 14-1, pre-eminently adapted as he is to the rapid mounting and dismounting of the mounted infantryman, is not the animal on which the latter can hope to escape the better horsed troopers of the enemy's cavalry screen.

Nevertheless the mounted infantryman has his part, and an important one, in reconnaissance, the stiffening of the reserves of the extended squadrons, the holding of defiles, bridges and commanding tactical features covering the retreat of the advanced cavalry, and with the aid of the concentrated patrols themselves, opposing any attempt on the part of the enemy to brush aside all obstacles intervening, and penetrate in the quest of information to the vicinity of the main columns themselves: a battalion of mounted infantry attached to each brigade of cavalry should be sufficient to serve the purpose, kept concentrated so far as possible, and freeing by their presence the cavalry for their harassing, screening and reconnoitring duties, and from all anxiety as regards the sufficiency of the support in their rear.

On the other hand, should a reconnaissance in force be deemed necessary with the object of endeavouring rather than risk a general action on insufficient information, to force a way through the advanced bodies of the enemy and reveal to some extent what lies behind them, no more suitable force can be devised than one composed of cavalry, horse artillery and mounted infantry. Von Goltz, when speaking of advanced guards, remarks that a combat is easily stopped as long as cavalry and artillery are alone engaged, but it is more difficult to break off an action if infantry have joined in the fight. The battle prematurely brought about by bodies of troops sent on primarily to reconnoitre, and only to fight in so far as it is necessary thereby to lift the veil from the enemy's dispositions, has always been the drawback to reconnaissance in force.

The presence of mounted infantry with the cavalry and guns strengthens the reconnaissance, and involves none of the disadvantages attendant on the employment of foot soldiers in an advanced

position, from which it would prove so difficult to withdraw them if once engaged.

In the duties connected with the gathering of information, the mounted infantry, except in the absence of cavalry, must play a subordinate part, but in those concerned with protection the combined power and mobility of the arm renders its co-operation of highest value.

Amongst the duties which, under the head of protection, commend

Mounted infantry as artillery themselves most directly as duties for escorts. which mounted infantry are particularly suitable, that of escorting artillery is one of the most conspicuous. It is a service requiring a mobility equal to that of the field battery, whose pace does not exceed a trot ; it is a service of positions, the escort ensuring the security of the guns, whilst the latter bear their part in the action of the day. It is largely a stationary service, with alternate halts and changes of position. Careful reconnaissance of the country immediately ahead of the advancing batteries, and of positions from which the enemy's fire could be brought to bear upon them whilst in motion, is vital, but the pace is unlikely to be excessive. It is a duty in which fire action is of paramount importance, whilst the artillery is in action, in keeping the sharpshooters of the enemy from picking off the *personnel*, in protecting the flanks and patrolling the vicinity ; when the guns are in retreat, in covering their retirement and keeping their pursuers at a distance ; when the artillery is threatened by cavalry, in adding the fire of the escort to that of the guns, and at the last, in providing the hedging of their bayonets for the protection of the flanks, whilst the batteries sweep the ground over which the attack is approaching with case. It is admitted that artillery, in order to efficiently serve the interests of the force to which it belongs, cannot be held responsible for its own security ; an escort to be effective needs no charging power, and would find the picks and shovels carried with the batteries, or a wire trip pegged round their position, probably of infinitely greater service in carrying out this portion of the protective rôle than lance or sabre. Little, if any, manœuvring of led horses should be necessary, the linking of their mounts freeing the majority of the riflemen for the security of the batteries.

Cavalry possess great mobility and some fire power, mounted infantry great fire power and some mobility, and it appears, in the application of these characteristics to the various phases of warfare, that a guide is found to the correct rôle for which each arm is best fitted.

The duties of screening and reconnaissance are so wearying to men and horses, and cause so great a wastage of horseflesh, that it becomes a matter of urgency to spare them, as far as possible, if those important portions of military operations are to be efficiently performed. It is owing to the dispersion of cavalry in escorts to individuals and convoys, as orderlies, amongst outpost pickets, and the like, that the screen behind which the columns are moving is frequently so thin and

vulnerable, and when, perhaps, the long looked-for moment for an attack by cavalry mounted has come, an opportunity to surprise artillery or complete the discomfiture of broken infantry, or, in the event of disaster, to sacrifice itself to save the retreating battalions, the horses, played out by nights saddled up and days spent in the exhausting duties of escorts and orderlies, in addition to their own speciality of reconnaissance, are too done to be of much use.

The distribution of the heavy burden which falls upon the mounted troops will militate against the undue dispersion of either cavalry or mounted infantry, tend to keep them together, much to their advantage, under their own officers, and enable them to bring their best efforts to bear upon the duties for which the characteristics of each best fit them.

The principle on which the outpost system is based demands the effective combination of the two main elements of observation and resistance.

Outposts.

For the latter, infantry are best fitted; the former may be divided into two parts—the observation from the outpost line itself, and that which pushes beyond its confines and feels for the enemy by reconnoitring bodies. As no defence, however gallant, which does not include counter-attacks, can hope to achieve any considerable measure of success, so no outpost system devoid of efficient and far-reaching reconnaissance can claim to have provided for the security of the force it covers. A feeling of security is based on the possession of good information. For these duties of more extensive patrolling from the outpost line bodies of cavalry should be employed—compact bodies under their own officers, detailed for this particular service. For all duties needing mobility within the outpost system itself, mounted infantry are peculiarly fitted to act with their comrades of the infantry, of which the line will be mainly composed, and on whom will devolve the responsibility of repulsing an attack.

The greatly increased range of modern ordnance necessitates the very wide extension of the covering force of a body which may be temporarily halted in an enemy's country, and which otherwise may at daybreak find itself under shell fire from a position no great distance from its picquet line. The drill-book lays down that the outpost line should prevent an enemy from bringing artillery undiscovered to a position within 4,000 yards of the main body. During daylight careful patrolling should go far to effect this object; at night time the task may prove a difficult one, unless the line of picquets is over two miles from the force covered. This wide-flung cordon must consequently be largely composed of mobile troops by day, and by night the more exposed and distant portion of the outpost system must be of sufficient strength and in so strong a position as to be self-supporting and able to hold its own against attack. The ever-increasing range of firearms thus appears to indicate the very extensive employment of mobile infantry as outposts in the future.

In the event of the outpost line becoming a rear guard, destined to secure the retreat of the body it covered when stationary, a large proportion of mounted infantry will be essential to act with the cavalry, and play the part of successively showing a bold front, and disappearing without a contest, when the enemy has been decoyed into deploying and taking steps towards outflanking the position. But this phase of the role of mounted infantry will be entered into more fully under advanced and rear guards.

The methods by which the security of a stationary force is guaranteed must be adapted, in common with all military operations, to varying circumstances and conditions. Much that is applicable as against a civilised enemy, armed with modern guns, and fighting on more or less orthodox lines, must be largely modified, as experience has shown, when operations are conducted against unorganised and undisciplined foes such as the wild tribesmen of our North-West Frontier, or, indeed, the slim and dogged burghers of the South African republics. As against the Boer the dispositions already sketched are applicable; but in campaigns against the tribes beyond the border, picquets alone have been found efficacious, posted at nightfall at likely points from which the camp can be commanded and sniped, or at which the enemy might concentrate for a rush. They must be of a strength sufficient to hold their own without support, entrenched and alert, sufficiently distant from the camp to keep prowling marksmen of the enemy from getting within range, and ready to offer a desperate resistance in case of attack, and so summon the sleepers of the main body itself to the defence of their entrenched perimeter. But this latter is a service for which infantry are better suited than either cavalry or mounted infantry.

In the absence of an advanced force of cavalry to cover the march of the columns and reconnoitre the enemy, the importance of an advanced guard is very greatly enhanced. Its duties will then include careful reconnaissance of the enemy and of the country traversed, the occupation of bridges, defiles and features of tactical importance from which, if in the enemy's possession, the march could be harassed and retarded. The greater part of these duties will fall chiefly upon the van-guard, which should be composed of cavalry for their efficient execution. As has already been pointed out, the duty of reconnaissance is one for which the cavalry from every point of view is pre-eminently fitted. The occupation of important points on the line of march, at all events in the first instance, is a portion of this rôle; it is a rôle which will lead them far ahead of the column, due to the far-reaching range of modern guns, far from support, and possibly into situations from which it may be necessary to cut their way back, or to trust to the speed of their horses to escape capture.

Cavalry, then, should constitute the vanguard under these circumstances, and the mainguard be very largely composed of mounted infantry, which can be disposed so as to act in support of the cavalry of the vanguard and to render them assistance in

forcing back or brushing aside minor attempts of the enemy to hamper the column and cause its unnecessary deployment.

The efficient co-operation of the mobile units working in concert in their front, the cavalry reconnoitring and screening as they push forward, and the mounted infantry appearing in support whenever a serious check seems to be imminent, the march of the columns should suffer little interruption. Should a determined effort be made by the enemy to brush aside the advanced guard and strike the head of the column, it may be reasonably anticipated that the cavalry scouts could give sufficient notice to enable the mounted infantry, who should be in close support in an enemy's country, to come to the aid of the advanced squadrons, or to take up a position on which they could fall back, and where the complete advanced guard could withstand the enemy's onset until the force they cover had had time to deploy.

Should the advance of a column be covered by a screen of advanced cavalry pushed well to the front and in communication with the bodies in rear, in order to ensure the immediate security of the march, and to dispose of any small parties of hostile troops who may have succeeded in evading the patrols, an advanced guard composed of mounted infantry and infantry should be adequate, the vanguard composed of the former, the mainguard of the latter.

In the case of the advanced guard of a force following up an enemy in retreat whose rearguard is covering the retirement by occupying successive positions, a strong body of mounted infantry moving in rear of the cavalry vanguard, and by wide movements outflanking the positions which the patrols have unmasked, appears the most effective distribution of the two arms.

Thus it is considered that, unless the front of a force is adequately covered by a screen of extended cavalry, the vanguard should on all occasions be composed of that arm, the mainguard be divided into two parts, of which one should be mobile, ready to move to any point where its support is required, and at any time when a check is threatened, and with the cavalry, to hold their ground until reinforced by the solid strength of the infantry of the mainguard, or to fall back upon the latter, as the commander of the advanced guard may consider advisable.

The lessons taught by the South African campaign, and by many of our expeditions on the Indian frontier, have emphasized the importance of mobile troops moving in advance of the column and securing all points of vantage from which the force could come under the fire of an enemy holding them.

The cavalry of the vanguard should reconnoitre and seize all such points in the first instance, *i.e.*, before the possibility of the troops coming within range of fire emanating from them. They should be relieved by mounted infantry from the mainguard, who should not relinquish them until relieved by flank guards or troops from the

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main body or rearguard, or until all risk of annoyance by the enemy so far as they are concerned, has disappeared. Movements so far from the line of march, and involving movement from point to point, necessitate the employment of mounted troops, acting, for the most part, in their dismounted rôle.

Amongst the numerous and important services which the mounted arms can render to the infantry, which after all constitutes the army, that of covering its retreat and shielding its retirement from loss and annoyance at the hands of its pursuers is perhaps the most valuable.

There is, of course, a vast difference betwixt the retreat of a beaten and disheartened army, and the withdrawal of a column to camp after a frontier raid. A difference largely of morale; due in the one case to the admitted failure of an effort, inevitably involving some loss of spirit and of confidence, and in the other to a consciousness of successful enterprise followed by a wished-for return home after a trying day. Under both circumstances in country where mounted troops can work at all, and with such alone we are obviously concerned in this article, the feeling of security which the efficient execution of the duties of a rearguard engenders, does much towards the re-establishment in the one case, or the maintenance in the other, of that indispensable asset, morale, in addition to the mere physical protection which is thereby insured.

Here, in India, when thoughts of the possibilities of the future speculate upon the covering of a British retreating force by a rearguard, the imagination conjures up either clouds of cossacks with rifles and long lances pressing close upon the rear and round the flanks, or hordes of wild tribesmen, active as goats, armed with rifle and keen-edged sword, bearing down upon the rearmost bodies, overlapping the flanks and sniping from vantage points on either side the track.

It is in keeping these in check and relieving pressure on the tired infantry, that the cavalry and mounted infantry, find a rôle which demands all their skill, marksmanship and mobility. Formed bodies there probably are not to charge; if such exist they are scattered in a moment by a well directed blow; but scattered only to follow dispersed and inflict loss by rifle fire on their retiring assailants. The command of all points from which the line of retreat can be harassed is vital, of defiles and ravines in which parties of the enemy can lie concealed, until straggling transport or a lagging picquet affords them their opportunity. The very tenacity with which a rearguard must at times hold on to a position to render feasible the secure retreat of the main body through a defile or behind a river line, entails a mobility in the final retirement which mounted troops alone possess.

The retention of fire-power in such a position until the last moment to check the ardour of the enemy's advance and necessitate wide and wearisome flanking movements, is a factor in military tactics for which mounted infantry are peculiarly fitted, whilst the transference

of reinforcement to a threatened flank, and the eventual retirement from the distant extremities of a far spread modern rearguard position involve a facility of movement equal to that of the cavalry, mounted infantry and mobile guns, of which the advance troops of a hostile force moving in touch of a retreating foe, is certain to be composed. The cavalry of the rearguard screening the line of defence taken up by their mounted infantry and artillery from the enterprise of the enemy's scouts, hiding its weakness and dissembling its strength, the while furnishing information to those in rear of the dispositions contemplated. Brushed aside at length by the heavier metal of the hostile advance, the squadrons would concentrate on the flanks of the latter, harass its progress, and disclose and hamper the turning movements of the attack. The rearguard, forced at last to relinquish its position, its cavalry by means of dismounted action and mounted bodies guarding the flanks, might endeavour to conceal the fact of the evacuation, and by still further delaying the pursuit, afford opportunity to the remainder of the rearguard to repeat the tactics above sketched in a new position. The retirement by small bodies in extended order, on "trickling" lines, has been found to minimise the risk of loss in frontier warfare.

The study of the opportunities in the defence of a river line for the employment of cavalry and mounted infantry is an interesting one in this connection. It is hardly too much to say that in ninety cases out of a hundred when a river line has been held and lost, as it has been in the end almost invariably lost, the loss has been due to lack of information or to want of mobility on the part of the defenders, and the failure may be attributed to lack of good cavalry in the first instance, and to want of mobile infantry in the second. Trained scouts of the reconnoitring arm are needed, ready with intelligence of the enemy's designs and preparatory measures, mobile fire-power at hand to hasten to the threatened point and take advantage of the vast difficulties presented by the crossing of a river, and, above all, of an Indian river, when the passage is resolutely contested by troops in position on the opposite bank. Of the many lessons which Napoleon has taught to his successors in the trade of war, perhaps none is so strongly and frequently impressed as that of the futility of the attempt to hold a river line by a force ill-informed or immobile. Cavalry, mounted infantry and mobile artillery possess the qualities essential for this service; the cavalry by timely information and by shock tactics against such parties of the enemy as have effected a lodgement, the mounted infantry and guns, aided by the dismounted action of the squadrons, by bringing so accurate and sustained a fire to bear from positions carefully chosen, as to render the enterprise hopeless.

When no line of railway exists whereby troops, detailed for the protection of the line of communications, can be rapidly transferred from one point to another, considerable mobility is required from the troops so employed to effectively perform their duties. The constant patrolling and escorting would entail great hardship if performed by

infantry, at the same time they are not cavalry duties in any sense ; they give range to none of the special training of man and horse, there is no demand for troops acting in their mounted capacity ; such action as there may be is one provided for by the rapid transference of rifles from point to point, by the holding of main points on the line by sufficient rifles, by the fire-power of an escort out-shooting or overawing those who threaten to attack it. A line of communications is after all but an elongated line of outposts, lookouts carefully placed, patrols skilfully and frequently utilized, a post resolutely held, and the enemy finally pursued from the vicinity of the communications. A rôle largely of position, and almost entirely of fire action, the more mobile the better, in which mounted infantry can supplement infantry with greatest power and effect. Such fighting will probably possess many of the elements of guerilla warfare, in which the mobile rifleman has a suitable, if not a congenial, task. Few duties are so wearying to horseflesh as those which the security of lines of communication entail ; their horses are essential to cavalry ; mounted infantry do but take their place as infantry again should their means of mobility fail. Thus the cavalry horse should be in some wise spared for the many indispensable duties for which his training and stamp render him so valuable an asset.

The escorting of convoys is a service for which much fire-power and some mobility are the qualifications required. Measures for prevention of

Escorting Convoys. surprise, and the frustration of ambushes become necessary, and, in case of attack, fire action from the limits of the convoy itself, or from a position covering it. Convoy escorts should, as a rule, be composed of infantry with a few mounted infantry to perform the duties of advanced and flank guards, occupy important points from which an enemy might cause loss and delay to the convoy, and in case of need, carry word to the nearest post for reinforcements.

From the days of its infancy the action of cavalry has ever been more effectual in the attack than in the defence—a fact partly due to the nature of that branch of the service itself, partly attributable to the weapons used, partly to what is described somewhat vaguely as the traditions of the arm. The latter vary so considerably, according to the interpretation placed upon them by various individuals or schools of thought, as to be by no means a stable factor. It has been maintained in the past, and is constantly urged at the present day, that the higher instruction of cavalry in the use of the firearm and in the exercise of fire tactics is incompatible with the spirit of that branch of the service. It is argued that shock tactics still hold an important place upon the battlefield, that the elaborate training of man and horse, essential for that rôle, leaves little time available for instruction in what has hitherto occupied a very secondary position in the cavalryman's estimation, *i.e.*, familiarity with his firearm and with fire tactics ; further, that it is unwise to shake the trooper's confidence in the irresistible efficacy of the charge home, and the deadly quality of the "arme blanche," by poisoning his mind with the atmosphere of

of the bull's-eye and the bayonet. That good cavalry will degenerate as cavalymen and turn out in the end but indifferent mounted infantry.

Perhaps none but a cavalryman can realise how hardly attained and how carefully guarded is the standard of efficiency which separates the perfect fighting machine of its kind, which a really well-trained and equipped force of cavalry constitutes, from the rabble of horsemen, the shock of whose ragged ranks need be little feared, and whose disorderly pursuit, if by chance successful, or whose disorganised panic in repulse, is an equally contemptible feature on the battlefield.

It is confidently believed that the day of shock tactics is not over, and that the effect of a well-timed, well-led, and delivered charge is as far-reaching as ever it was in the past. However accurate the weapon which the rifleman possesses, and long the range may be to which it is sighted, the factor of human eyesight and human nerves remains unchanged. The more the infantry incline towards lightening the load carried by their men by diminishing the bore of their rifle, and with it the weight of their ammunition, so the opportunity of cavalry increases. A bullet too small to stop the rush of a Ghazi will scarcely stay a determined charge of extended cavalry. The cry that the day of cavalry is now at an end, has accompanied every improvement in firearms since the latter were invented. Nevertheless few will deny that the recent developments in accuracy and range, aided by smokeless ammunition, has rendered the charge a service of greater risk than heretofore, and the opportunities for its employment of far less frequent occurrence. The distance at which hostile forces are now obliged to come into action, renders the fleeting chance for a well-timed charge more difficult than ever to seize, and a long advance, probably under fire most of the way, requisite in order to seize it. Nevertheless the chances do occur, and the moral effect and the physical result amply justify the care and judgment, the labour and thought, which have for long years prepared the way for that gallant dash upon the battlefield. But it is hardly overstating the case to say that the proportion of opportunities for dismounted action to those for shock tactics is as ten to one. The order of precedence in cavalry qualifications has changed, and the charge no longer occupies first place. No one realises this more thoroughly than the cavalryman himself, and every effort is being made to bring the fire training of the mounted arm into line with modern requirements. The cavalryman, then, must be as thoroughly trained as a rifleman as he now is as a trooper, and the ideal is no impossible one. Man and horse once rendered efficient in their respective parts with relation to the mounted rôle, the allotment of one day in the week for mounted combat, post practices, and riding-school for such as need it, one day for any squadron exercises the squadron commander may select, and one day for regimental work, as a rule, in the open country, should be sufficient to maintain that efficiency, allowing two days for instruction in dismounted action and fire tactics. And surely there is no reason

to think that such a course would be detrimental to him as a cavalryman, that he would distrust his lance and reject it *in toto* for his rifle, or lose confidence in himself and in the efficacy of the shock and of cold steel, when called upon once more to employ the traditional rôle of cavalry. It is giving him credit for but little enterprise, courage or intelligence to think so and those are not qualities usually found lacking in good cavalry.

On the other hand, nothing tends to convince the cavalryman so completely of the narrow limitations of his sphere of usefulness, as generally understood, as the conduct of most manœuvres, the reconnoitring phase is soon brought to a close, the cavalry is then pushed to a flank to play with the other cavalry, whilst the business of the day proceeds. Should the squadrons emerge from their seclusion and seizing what seems the psychological moment attack mounted the chances of their being adjudged successful are highly remote; they are probably told that their action, though brilliant, would have been impracticable in real war. Perhaps rightly so, as the moral effect cannot be calculated in cold blood on a field-day. If they resort to fire tactics they are hardly regarded seriously, the knowledge of the meagre education the arm receives in the dismounted rôle, and the small proportion of rifles, comparatively, that a force, formidable when mounted, can bring to bear, renders its fire action a *quantité négligéable* on most peacetime battlefields. In the future, no doubt, the possession of a suitable firearm, and the consciousness of power based on high efficiency in either rôle, will produce a feeling of confidence and superiority. It is to their power to render efficient service at any time under any circumstances, either mounted or dismounted, that the usefulness of cavalry, as judged with other arms, may be attributed. For the apprehension that the dismounted rôle will in time entirely supersede the mounted in cavalry tactics, sufficient grounds appear to be wanting. Both are matters of opportunity, the features of the situation more or less clearly indicating the class of tactics most advantageous under the circumstances. That a pair of scouts should betake them to fire tactics in order to obtain information is as unlikely as that a squadron should charge a rocky kopje held by infantry.

For dismounted work simpler methods of linking horses, and more frequent resort thereto, appear advisable: occasions are not infrequent, in country such as abounds on the frontier, when one man on foot could lead the horses of his section, and still be not far in rear of his comrades slowly advancing and using their rifles as they go. The training of horses to lead quietly is as important as the teaching of the men themselves to dismount and mount with rapidity.

It appears too much to expect that large numbers of high-mettled horses, fed on good and ample forage, can ever be trained to stand motionless and unattended to whilst their owners act on foot. The Boers' ponies as a rule did so, but mainly because they were usually

underfed and overtired, and only too glad to have the opportunity. Likewise, owing to the burgher's habit of knee-haltering and turning his horse loose to graze on the veldt on every occasion of a temporary halt, the animal ceased to become uneasy and excited when left to himself. These are methods scarcely applicable to Indian conditions.

Those who maintain that all cavalry should be converted into mounted infantry, are as much in error, in the writer's opinion, as those who hold that the bulk of the training of cavalry should be devoted to preparation for a rôle in which not a tenth of their opportunities occur. In reconnaissance do most of those chances of rendering valuable service present themselves; occasions for dismounted fire action are frequent, for the attack mounted the favourable moment comes but seldom,—how seldom can be judged perhaps from the fact related by Prince Kraft, that during the whole course of the war of '70 the Prussians used masses of cavalry on the battlefield but once and the French three times, whilst besides these there was but one charge by a force as large as a cavalry brigade, *i.e.*, at Loigny. When such charges were made he admits that the effects were great and far-reaching.

The South African war has not been fruitful in examples of attacks by cavalry mounted, that of the 5th Lancers at Elan-Islaagte when the Boers suffered heavy loss, and the charge at Diamond Hill, are two of the occasions most readily recalled. But on our own North-West Frontier the use of cavalry has been frequent and marked with signal success, notably at Landikai in 1895 and at the relief of Chakdarra in 1897. Perhaps never did cavalry do better or more timely service than when the 13th Bengal Lancers charged through the wild Mohmand tribesmen, pressing round the small and fatigued column from Peshawar, on the rocky plateau near Shabkadr in August 1897, scattered and drove them back to the hills, thereby relieving a difficult, if not critical, situation.

Mobility is the essence of modern warfare, rifle-power the decisive factor, the combination of the two constitutes the foundation of success in the field. As in these days we live faster than our ancestors, so also we fight faster. Warfare is a race for strategic or tactical superiority, be it a race for information, for position, or for security. Until recently the cavalry and horse artillery have been the only mobile portions of the army, and the weight of duties imposed upon the former has often proved more than horseflesh can bear. A catalogue would contain every phase of what may be not inaptly termed military fagging, with the result that the cavalry have been split up and exhausted in duties which have no bearing whatever on the rôle for which they are trained, and by which they are judged in war; the consequence being that in peace-time their training is interfered with and impeded by their multifarious duties, and their attention diverted from the rôle, to excel in which all their efforts should be directed. The mounted infantryman has been resuscitated from the ashes of the dragoon to fill the gap betwixt the cavalry and the solid though slow moving infantry. Upon him

then should devolve those portions of the mobile rôle in which fire action is the preponderating element. Cavalry and mounted infantry are still but auxiliary arms to the infantry, but arms which, co-operating and supplementing one another, can bring so much mobility and fire-power to bear as to become almost independent of the paramount branch, at all events in minor enterprises such as the relief of beleaguered garrisons or of hard-pressed posts on the line of communications.

The campaign in South Africa affords numerous examples of their utility in this sphere. The cavalry reconnoitring, estimating the value of the enemy's investment and the best means of frustrating it, preparing the way for the attack of the mobile infantry, co-operating in it themselves, and finally pursuing the enemy when driven off. Cavalry have so frequently been dubbed an anachronism that it is strange to find the foot soldier so near becoming an auxiliary to the mounted arms as he undoubtedly has done during a large part of the operations at the Cape.

Far extended are many of the isolated posts which keep watch and ward in the wild regions beyond the borders of our Indian Empire, relatively far distant are the supports on which they rely, at times when some mysterious talisman or some new prophet may set the whole frontier suddenly ablaze, and the turbulent clans sink their feuds for the time and fired with a longing for the blood of the unbeliever, gather round some isolated garrison. Relief must be effected at once for reasons of policy as well as of humanity, in spite of the fiery heat or bitter cold of the Frontier season. Superhuman efforts are made and many lives are sacrificed, especially amongst the less mobile troops, of which the supports are often composed. Would not flying columns of cavalry and mounted infantry and, where possible, mobile artillery, serve the purpose far better, minimise the risk and the strain when the crisis comes, and inspire confidence in those to whom time may mean so much.

During the attack upon an enemy in position, as in so many other phases of military operations, the mounted infantry have an important part to play, the cavalry finding their opportunity before its commencement and after its delivery, in the previous reconnaissance and in the subsequent pursuit.

Once the neighbourhood of the enemy has been reached, whilst the necessary dispositions are being made, the cavalry remain in observation of the position, at the same time screening the plans of the attackers from the observation of hostile patrols. As soon as the attack has been entered upon, the squadrons are for the most part concentrated, although patrols still watch for movements against the flanks and rear of the advance, and endeavour to place themselves to the best advantage for cutting off the enemy's retreat, a disconcerting movement, especially against Asiatics. At the same time measures are taken to checkmate endeavours of the enemy's cavalry to harass

the advance. The mounted infantry concentrated on the flanks of the attack counteract the efforts of the mobile troops of the defence to seize positions from which its progress may be retarded, and neutralise their attempts to hamper the advance by direct action against its flanks, thereby shaking the confidence of the attackers by keeping them for a longer period under the defenders' fire, delaying the final assault, and lessening its prospects of success. In modern warfare, positions are so strung out that mobility of a high order is requisite to turn a flank, and it is in the ability to transfer the immense fire-power of infantry to the decisive point that perhaps the greatest value of mounted infantry lies. Nevertheless the desperate endeavour to secure the flanks by the extreme prolongation of the defensive line produces its own antidote, by weakening the defence at all points, and rendering it liable to be pierced at any one of them by the concentrated power of the assault.

Should the attack fail, cavalry and mounted infantry with mobile guns combine to cover the retirement of the infantry, as sketched when dealing with rearguards. In the event of the success of the attack, the mobile arms have perhaps their most favourable opportunity of effective action. Whilst the enemy are in disorderly flight, the cavalry with lance and sabre scatter and cut down the fugitives, heading them off from hillsides and places of security, frustrating efforts at rallying, and anticipating attempts to seize positions on the line of retreat. As must often happen, however, the ardour of the pursuit may bring the cavalry face to face with formed bodies of the enemy, perhaps occupying ground impassable for mounted troops, and the cavalry, in some disorder, recoil. It is then that the mounted infantry, moving in close support of the pursuing squadrons, save the situation. Pressure is brought to bear on the enemy's flanks and rear and closely followed up by the cavalry he continues his retirement. The very characteristics themselves of the pursuit, the ardour it engenders and the dispersion it entails, have ever invited a check more or less disastrous in proportion to the distance from their infantry to which the chase has led the squadrons. The presence of mobile riflemen in close support adds metal to the pursuing force, particularly welcome at times when further progress is found to necessitate that difficult and somewhat uncongenial service for cavalry—the attack on an enemy in position.

If the attack and the pursuit offer opportunities for the co-operation of cavalry and mounted infantry, the defence no less lends itself to similar combined action on the part of the mounted arms. Recent developments have added much power to the defensive rôle, the increased range of modern artillery, the accuracy of latter-day fire arms, smokeless powder and the invisibility of the defenders, and lastly, the adaptation of mobility to the purposes of the defence.

The patrols of the cavalry, in close contact with the advancing columns from the earliest periods, report the dispositions and movements of the enemy, and indicate opportunities for interference with

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their successful execution, at the same time, with the assistance of the mobile infantry hampering the advance and impeding the assault. But it is within the position itself that mounted infantry are of greatest value. The range and accuracy of modern weapons have practically banished frontal attacks from the category of feasible operations. The defence is strung out to make the attainment of the flank as laborious as possible, and to entail a long flank march in the presence of the enemy, and perhaps for much of the way under his fire. The immense difficulties of reconnoitring a position held by an enemy, and the complete invisibility of its defenders, even when hotly engaged, renders it almost impossible to ascertain in what strength any particular portion of the long line is held, and at what point an attack offers the best chances of success. With reserves of mobile riflemen, any point threatened can be readily reinforced, and the flanks drawn out or thrown back to baffle a turning movement by converting it after all into an attack in front.

Counter-attacks, too, depend for success largely upon the mobility of the troops delivering them, on the rapidity and unexpectedness of their coming, and for confidence and security, on the power of rapid withdrawal if forced to retire. The favourable moment for the delivery of a counter-attack is a fleeting one; troops must be quickly collected, or if already held concentrated for the purpose, swiftly transferred to the point desired, lest the conditions should change, and the chance be found to have been allowed to slip.

Perhaps it may be considered that the foregoing has but a remote application to Indian conditions, to the defence of a position such as the Malakand, or of some entrenched camp across the frontier.

But it is in the defence of our great positions against a civilised foe, in country accessible to the mounted arms, that the value of mobility has its most obvious application.

Questions of supply, of practicability for transport, of sufficiency of water, of sites available for great camps, to quote but a few, limit the routes by which a large force could operate against our Indian Empire, and mounted troops could render valuable service on almost all.

The defence of a territory accessible by means of numerous mountain passes, presents many of the problems and suggests many of the solutions applicable to the holding of a river line. In either case mobility is the preponderating factor. Alert, enterprising and skilful reconnaissance, backed by mobile rifle power, which can be concentrated rapidly at the point threatened, ready at hand to secure the positions which the cavalry with dismounted action have already occupied, and able to hold them until the battalions, hurried forward, can turn to account the vast difficulties which the passage of defiles, defended by a resolute and well posted enemy, must inevitably present. The exit of a force from a pass or defile offers many opportunities for the employment of cavalry in attacks mounted, if skilfully concealed and handled, and if the fire of such troops as are detailed to cover the

movement by crowning the heights commanding the exit is kept down by mobile infantry, the enemy should suffer heavy loss before effecting his purpose.

Such then are the respective rôles of cavalry and mounted infantry, most superficially sketched it is true, but presenting spheres of usefulness possessing limits clearly defined, and based upon considerations of training and armament. With distinctive functions, characteristic of either arm, neither complete without the co-operation of the other, the mounted infantry, like artillery, helpless until unlimbered, the cavalry at their best in the saddle; the combination of both forming a force independent and self-supporting, capable of much that either arm of itself could not effect. Study of the application of methods and systems of long standing to the conditions of the present day and of the results accruing therefrom, strengthen the conviction that, for the future, the canons of the creed of both cavalry and mounted infantry will be comprised under the four heads of invisibility, mobility, fire power, and individual resource.

But a few years ago we looked to the German system and to German tactics for salvation. Their system certainly possessed the recommendation of having been successful, in a more or less modified form, in two great campaigns. Here in India it maintained in a less degree, because we were not altogether without a system of our own—a system which the Afghan and the frontier tribesmen in general had been at some pains to teach us, and which was applicable to local conditions. Is it unfair to ascribe some of our losses and failures at the Cape to over-adherence to and excessive belief in a system of tactics which had no application to the local conditions prevalent there?

It is with much caution that we should graft the methods found desirable, even indispensable, in South Africa against the Boer commandos upon the system found suitable to India; in other words, apply the mounted infantry idea unreservedly to Asiatic warfare. Against Asiatics—and the Russian himself is little more—moral effect is of greatest importance, and cavalry possess the quality of producing that effect in a fuller degree than any other arm. Under the circumstances which have been briefly sketched, it is considered that the employment of mounted infantry will conduce to the efficient performance of the varied duties which fall upon the mounted branches of an army; but unlimited faith in the latest fad, that all cavalry should be made into mounted infantry, leads one not far from another latter-day South African maxim, that infantry have ceased to be useful in the field unless they are mounted. It is held that both conclusions are equally faulty, mainly because the Indian army is not designed for service in South Africa.

TRAINING.

To fit men and horses by the simplest methods for the efficient

execution of the parts which they are destined to play in war, is a task which monopolises all the skill and zeal and thought of those who have to

train them. To teach nothing that is not directly conducive to efficiency in the rôle contemplated, and to omit nothing which can possibly tend to produce the particular ideal aimed at, is a problem easy, as the columns of our newspapers bear witness, to discuss, but difficult—how difficult, only those whose business it is to find a solution can appreciate—to satisfactorily solve.

The primary requisite of a cavalryman is undoubtedly horsemanship, and secondarily marksmanship. Why so, when it has been urged that his opportunities of dismounted action are ten times those of his chances of acting mounted? Because in his case marksmanship is but the accessory of his mounted capacity; in the case of the mounted infantryman the relations are reversed. The situations into which his duties as the "eyes and ears of the army" lead him, frequently call for the use of the rifle, but he could not act in that capacity at all were he not a really good horseman. Whether employed in reconnaissance, in advanced and rear guards, or on almost any other service, he is ever nearest the enemy, and must often rely upon his horsemanship to extricate him from hazardous situations. His mobility is his all-important qualification. He is the only man in the army who can fight mounted and thus take advantage of opportunities of every type.

The mounted infantryman must be able to ride well,—to feel sure of being able to ride his cob over any ordinary country.

From the cavalry trooper more than this is expected; he must have a seat which will enable him to concentrate the whole of his attention upon the use of his arms (when mounted). It is considered that insistence upon similarity of seat, and the exaction of any precise position in the saddle, is exalting to the importance of an end what should but occupy the status of a means, and is in fact a waste of time and energy. All ranks of the cavalry should thoroughly understand horses and everything connected with them, the more so of course (as in all training) in gradation from lowest to highest—stable management, the feeding of horses, saddlery, farriery and how to treat simple ailments and remedy minor defects. By courses and lectures, by books, by models and pictures, to excite interest in, and enlist sympathy with the animal to which alone cavalry owe their utility in the field.

There is little in the general cavalry course of equitation to which exception can be taken. It turns out strong riders, though the long stirrup and contorted leg and foot, suitable as they may be for work in the ranks, are certainly not so for travelling across country. Once a man can ride well his position is of infinitesimal importance, just as once he has been taught to mount and dismount without digging his toe into his horse's ribs, displacing his saddle or unsteading his charger by flinging himself in a heap into his seat, the precise motions can be disregarded, and the quicker and more actively a man mounts and dismounts the better. There is no doubt that both for cavalry and mounted infantry, in these days of fire tactics on foot, our

methods, of mounting and dismounting lack much in rapidity. Few things demand so much careful practice, and it is a small thing on which a great deal may depend. No time should be lost in unnecessary, or cumbrous words of command, such as the preliminary "Halt" or the ponderous mounted infantry order "For dismounted duty dismount and form in front of your horses." No "Stand to your horses" before regaining the saddle. Simply "With rifles dismount" or "To the right dismount with rifles." The point being to get men on and off their horses and ready for use with the least possible delay. It is desirable that a horse should learn to stand to be mounted. Men, when dismounted, should invariably form up at the double in column of troops in cavalry, or of sections in mounted infantry, in extended order, kneeling, and await orders.

As it is important that the cavalryman's horsemanship should attain a standard, the expenditure of time

Training of the horse. on which would not be compensated for by enhanced efficiency in the case of the mounted infantryman, so the cavalry troop horse must be an animal trained on different and more exacting lines than the infantryman's cob. The latter need but be a good confidential hack, clever across country, quiet under fire, and easy to lead; the cavalry charger must be in addition thoroughly trained to leg and rein, used to work in the ranks, and as accustomed to move and work out of them. Ready to go up to an adversary, and not shy of the use of arms by his rider.

The system on which our cavalry horses are trained on the whole turns out a very highly-schooled animal, if not always a sound one.

The riding school is often in danger of becoming something of a fetish itself, instead of a mere course of instruction for work in the field. The turns, the circles, the inclines, the passage, the reinback, all have their object in preparing the horse for movements in the ranks and in mounted combat, the care and precision exacted in turns on the forehand, centre, and haunches, have the appearance of overdoing an exercise which is of no material consequence.

The bending lesson is valuable in the breaking of a young horse, but a horse once well broken does not require perpetual bending, and the time now occupied in its constant repetition would be better utilized in mounted combat, or reconnaissance in the open country. Hocks are strained by the artificial positions of shoulder in, pass shoulder out, and the horse's natural action cramped by prolonged practice of the riding school canter, whilst the half passage at that pace seems to serve no useful purpose whatever, once an animal has been passed into the ranks, presumably a trained trooper. It may be contended that these exercises teach a man to use his leg and ride his horse, but even if that be conceded, it is a method of using the leg which has no application to work in the ranks, in mounted combat or in the field. A more practical method is to take the trained soldier away from the riding school, and make him school his mount over

jumps or across country. After years of practice at the turns and passages of the riding school, the horse knows so well what is expected of him that his rider's entire attention is taken up in preventing him from anticipating leg and rein and going through his lesson without aid from either. Again, the turns and circles in the canter are a most valuable preparation for the attack and defence practice, and ultimately for mounted combat. But once man and horse have completed the *manège* portion of their training, it would be better to practise both in the more advanced exercises than to continue to work away at the preliminaries.

A certain amount of riding school, preferably without stirrups, at the commencement of the drill season, serves to shake men into their seats again, after which work across country is of far more consequence to their horsemanship than the continual perambulation of a *manège*.

In short, it is urged that many of the fads of the riding school, on which so much stress has been laid for purposes of inspection, have little corresponding value as a preparation of man and horse for service in the field, and particularly so the more the probable conditions under which cavalry will be employed in India are studied.

Whilst on the subject of the training of horses a word may be said upon the subject of teaching them to lie down. Most horses will lie down on soft litter, strewn for the purpose; few on rough ground. Constant practice is essential lest they become rusty in the exercise. It is considered that a scout should perfect his mount in the higher flights of his profession, such as standing still unattended to, and promptly lying down when required to do so: standing motionless, with reins on neck, whilst his rider observes through glasses, sketches or makes notes; but to attempt to teach any considerable number of horses to lie down under all conditions and remain so is to pursue a "will-o'-th'-wisp."

Dragooning the mounted infantry man is obviously a mistake. Once the man has learnt to ride sufficiently well, he may be allowed to assume the most convenient and natural position consistent with equal comfort to his horse. He should be instructed in everything which tends towards the welfare of his cob, notably the fitting of saddlery, and every endeavour made to teach him to regard his mount as the essential of his mobile capacity and not as a machine to be used and thrown aside. It cannot be too much impressed upon him that he is an infantryman and helpless as a fightingman when mounted, but at the same time equal emphasis should be placed on the fact that he owes his utility and power as a mobile infantryman to his mount, and he should spare no pains to keep it in good case and fit for service.

For cavalry, constant exercise in mounted combat and the use of arms is invaluable, as accustoming a man to handle the latter and giving him confidence in his ability to do so with effect when occasion arises, in the *mêlée*, in reconnaissance, or in the course of his many other important

duties. His horse too ceases to be nervous and inclined to become out of hand, and consequently liable to give him away at a critical moment.

It is scarcely necessary to dilate in this essay upon the training of cavalry in shock tactics, the care and thought, the experience and talent of thousands of cavalymen has for generations been devoted to attaining perfection in this department of the cavalry rôle; the instruction in the drill-book is the outcome, and that, so far as it goes, it is based on sound principles, clear and complete, few will deny. The manœuvring of bodies of cavalry against one another is a practice only feasible at certain great cantonments where more than one regiment is stationed. Cavalry camps-of-exercise are consequently particularly useful, and would be even more so did they include a proportion of horse artillery and trained bodies of mounted infantry.

Advances to the attack, retirements, as also all manœuvring in the neighbourhood of the enemy, will seldom be possible without heavy loss in close order when under fire. Frequent practice then in moving at all paces in columns, in extended formations, across country and rallying to flanks or centre prior to arriving in the vicinity of the objective, should an attack in close order be contemplated, appears a valuable exercise for modern advances in the presence of the enemy.

It is in the training of men for reconnaissance and scouting, for work dismounted, and in the knowledge of musketry which that rôle demands, that our system leaves a gap which modern requirements demand shall be filled. The question of reconnaissance has been touched on before in this article, as too much of a drill and too little of an individual enterprise. Want of space forbids further comment. There is too much work in the riding school and on the parade-ground, too much reiteration and repetition of elementary exercises, too much babbling by rote of well-worn instructions, of practices which have long ago become a weariness to the flesh and a burden to the spirit.

Field training. Better to train men as they will have to fight, not by insisting upon the precise execution of turns on the haunches and forehand at the four corners of a *manège*, nor by aiming at the ideal of a lance exercise done together as one man, but by taking men into the country, teaching them to be observant, to see without being seen, how to use their faculties and develop their intelligence; to accustom men and horses to putting into practice on the rough country about cantonments the lessons first learnt upon a smooth and level parade-ground. How to dismount quickly under cover (not alight in the open and have their horses led there), how to instinctively and rapidly get into extended formation, how to push forward as skirmishers, taking advantage of every inch of cover, how to judge distance in the open, and use their rifles with judgment and precision. How to vanish to their horses, mount, and get moving before an enemy would well realise that the firing had ceased. This is but preaching mounted infantry tactics it is true, yet it is scarcely idle to labour the point that cavalry should be trained

(and armed) in some relation to the proportion in which its opportunities for usefulness occur.

Constant work in the saddle tends to keep a man fit and in hard condition, the cultivation of activity and alertness on the part of mounted infantry when on foot is vital. The instruction of both cavalry and mounted infantry in the art of taking cover is a practice of no visionary importance.

Hitherto the cavalry have possessed a firearm of so restricted a range as to stand little chance against the infantry rifle, and with hostile cavalry anywhere in the neighbourhood when the enemy came within range at all, it was high time to regain the saddle and seek an opportunity for an attack mounted. The arming of the cavalry with a long range rifle will augment their value and calibre under modern conditions, increase their independence, and double their opportunities.

Mounted Infantry Drill and Training. Mounted infantry have an easier task than cavalry in that their training is concerned with but a single definite rôle, that of the man who fights on foot with rifle and bayonet. The chief desideratum of their drill mounted being in advances and retirements particularly, and indeed in all movements in action, the adhesion of the men of each sub-section to one another, in order that when the position aimed at has been reached, fire may be opened without delay, and also that confusion may be avoided should they unexpectedly come under fire when mounted. Movements in close order are objectless because shock tactics are not a portion of their rôle, because movements of bodies extended by sub-sections are but little vulnerable to fire as compared with close formations, and do not offer a definite objective for cavalry to charge, or a compact target for artillery to range upon; and lastly because manœuvring in close formations mounted demands a peculiar and prolonged course of training of man and horse, which is an anomaly and a waste of time for troops whose rôle is not to fight mounted. So long as the men of each sub-section keep together and follow their officers the formation in which they move, or the accuracy with which they move, is a matter of minor importance: the ruling idea being to transfer so many rifles to a certain point with the least possible loss at a speed unattainable by riflemen on foot. At the same time, for convenience in handling mounted infantry, some instruction should be given in movements by sections and columns of sub-sections. Similarity of pace is essential to the cohesion of bodies of cavalry; whether a cob trots or canters has no bearing whatever upon the success or otherwise of mounted infantry tactics, and so is immaterial.

Rapidity in mounting and dismounting, alertness and activity on foot, confidence in the saddle, a complete comprehension of the art of taking cover, and skill in the use of the weapon with which they are armed, include most of the accomplishments which make for success in mounted infantry work. All close order drill on foot is unnecessary

(except such as merely facilitates the handling of the men), and indeed is to be deprecated as giving a false impression of the methods required in the field. Fire discipline, though its exercise in modern extended formations is difficult, should be maintained; discipline of all kinds is particularly important for troops whose very mobility may at any time land them in tight corners, under critical circumstances, far from support. Like that of cavalry, the training of mounted infantry, once the elementary stage has been passed, should be conducted away from the parade-ground, with as little tiresome routine as possible, and with every endeavour towards the development of intelligence and individual initiative. The training of men collectively, like the movements of troops in masses, must give way to individual instruction, intelligence, and effort.

The requirements of the service and the lack of cavalry may demand from mounted infantry, as the only mobile troops with a force, the performance of duties not strictly a portion of their rôle, such as screening, reconnaissance, and the scouting portion of measures for the security of columns on the march and halted. Some preparation for these capacities is therefore desirable.

The musketry training of both cavalry and mounted infantry is a matter of the first importance, and should be conducted on lines having direct reference to the manner in which, and the conditions under which, the fire of each is likely to be required and found effective on active service.

Volley firing is the simultaneous effort of a number of riflemen to assail a compact target, visible to all and visible for a sufficient period for the slowest to take aim. The target of modern warfare is seldom so accommodating. Military shooting now-a-days is a matter of individual opportunity, existing but for a short space, and while the section commander waits for what he considers the psychological moment, the man with the rifle misses his chance. Extended formations, and consequent relaxation of fire control, have rung the knell of volley firing. The era of simultaneous shooting has disappeared with that of compact and easily visible objectives. Amongst the old rules which need modification is that which prohibits firing unless there is something definite in view to fire at. Strict adherence to this maxim would not infrequently prevent a man from letting off his rifle at all during the whole course of an attack, whilst the defenders with impunity inflicted loss upon his comrades. The next best thing to shooting an adversary is to prevent his shooting you, and by directing a well-sustained fusillade at the points where the enemy is believed to be in force, his fire is checked, the cool deliberation of his aim is disturbed, and eventual opportunity afforded for the assault. This can hardly be branded as waste of ammunition when carried out with intention and moderation.

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In practice known ranges are as rare as fixed targets. The musketry training then of the mobile troops of an army should comprise unknown ranges, disappearing and indistinct objectives with limited periods for taking aim.

The elementary stage in which a soldier fires at a fixed and clearly defined target, at a known range, taking ample time to aim, is necessary for instructional purposes, so that he may learn his weapon and gain confidence in it and himself, but once the purely preliminary stage is passed, the practice ceases to constitute a preparation for modern warfare.

It is held that firing from the saddle should be taught in the cavalry, not with the object of maintaining a fusillade, when the transient nature of the opportunity gives no time for dismounting, nor when the presence of hostile cavalry renders it dangerous to do so, nor when a charge is contemplated immediately after the volley.

In the first case it is considered that the useful effect of such fire tactics would be infinitesimal; in the second that it would be better to leave musketry for more suitable occasions and seek out the enemy's cavalry mounted, and in the third that the combination of fire action mounted and shock tactics is an unnatural blend, even as a great cavalry soldier of old time, one Oliver Cromwell, appears to have decided when he forbade his troopers to fire their pistols as a preliminary to the charge, and taught them to trust to the impetus and cohesion of their attack, and to the good swords in their hands, for the discomfiture of their foes.

But for the many detached duties of cavalry,—screening, scouting, and the like—the ability to fire mounted may be of real value to individuals. Many horses have no fear of the practice from the first; the nervousness of others is easily reassured; it is best and safest to abandon the attempt in the case of animals constitutionally timid or excitable.

The further troops are pushed to the front or flanks, and the further they are from support, the greater is the value they derive from an efficient system of signalling. To mobile troops, the transmission of intelligence without corresponding waste of horseflesh, means an advantage impossible to appraise too highly. Every unit of cavalry or mounted infantry should be amply provided with signallers. Connecting posts should be as far as practicable, signalling posts, a chain of which should connect all isolated bodies with the main column, and so lessen the drain upon the units nearest the enemy, which the constant submission of information entails.

Intelligence, to be of value, must be early intelligence, to enable plans to be prepared or modified, dispositions to be made conforming to new developments, or a blow struck at the opportune moment. "Fortune taken at the flood," or precautions when there is still time;

whilst horses are galloping over 20 miles of road or country the opportunity may pass by. Signalling to be of value must be rapid, consequently signallers must be kept in constant practice, and a high standard of efficiency exacted.

EQUIPMENT.

The equipment of the cavalry soldier is a question involving many issues—issues which cover practically the whole sphere of his usefulness, and which are effected by the complete catalogue of his opportunities. Of course he must be clothed in a uniform devised with a view to increasing his invisibility and augmenting his mobility. The loose khaki garb of the Indian Army is eminently suited for its purpose, fastened with leather buttons perhaps instead of brass, although the latter retain little of their brightness on service.

Officers dressed the same as their men, and certainly, on foot, carrying the arm which they carry. This is a desirable precaution for close quarters, although it is generally agreed that what an officer does exposes him to danger unduly far more than what he wears; the gestures or actions incumbent upon his capacity amongst his men, rather than any more or less trifling difference between his dress and theirs, indistinguishable probably at distances over 250 yards.

As work with the rifle on foot, involving frequent doubling over heavy or difficult ground from cover to cover, enters so largely into the cavalry rôle in modern war, the long boot has been discarded for work in the field. The substitute, the puttie, wears so badly on service, becomes frayed and torn by every bush or by the friction of the lance, draws and wearies the leg, in nowise protects it, and takes so long to adjust, as to be unsuitable for cavalry or mounted infantry work. The gaiter of stiff leather in the cavalry, to protect to some extent the trooper's leg in the rough work in the ranks, and at the same time not to hamper his movements on foot, appears to be far the best leg gear, whilst the same article made of soft buff leather is adapted to men of the mounted infantry, who have no close order work in the ranks, and whose activity as riflemen is so important a factor in their capacity in the field.

Recent events tend to emphasise the fact that every cavalryman

<p>Ammunition.</p>	<p>or mounted infantryman on service should carry one hundred and fifty rounds of ammunition on his person. The rifle to be used with the best results must be loaded by means of a clip; of that there seems to be little doubt: the ponderous and lengthy procedure of charging the magazine by single cartridges, perhaps in the middle of an action, is as much of an anachronism as Brown Bess with her powder flask, wads and ramrod. Men should be taught to charge the magazine rapidly and fire from the magazine only. In the widely extended formations of the present day fire control cannot be exercised to any extent over individuals on the battlefield, self-control has to be</p>
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instilled before they get there. Men who are liable to lose their heads will not be reassured by having to fumble in their pouches or bandoliers for every round fired. The point is to make loading and firing easier for those who are not flurried, so that opportunities for a succession of snapshots may not be missed. Quick firing is the main essential of modern fire tactics, and quick firing means quick loading. Both necessitate an ample supply of ammunition.

The bandolier, the kind with leather flaps and clip divisions, is the most convenient receptacle from which to load. The waistbelt should hold one hundred rounds, the front portion of the shoulder strap, which should be of fairly broad leather, can be bandoliered to take another fifty. The portion of the latter which crosses the back to be left plain to admit of the slinging of the rifle when required.

The question of how to carry the rifle, whether on the person or in a bucket attached to the saddle, has been much discussed. The horse has to carry the rifle in any case. Is it better to risk the proportion of sorebacks which the rifle carried in a bucket of any kind is said to occasion, or to tire out the man who at the end of a long march, with 150 rounds of ammunition strapped to his person, may have to dismount and double for long distances, rifle in hand, whilst his horse rests eased of his burden? The object is to bring the soldier, as well as his horse, fit and unwearied into action, and except when the use of the rifle is frequent and imminent, it should rest in a bucket of a type designed and adjusted so as not to give sorebacks. The butt bucket of the kind found so useful at the Cape commends itself as the most suitable means of carrying the rifle both for cavalry and mounted infantry, but attached otherwise than in the manner in vogue there. The bucket should be slung attached to the saddle behind the left thigh, at such a height that the muzzle of the rifle, which stands upright in it, shall be approximately on a level with the top of the left shoulder and behind it, the left arm being passed through a leather loop attached to the upper swivel of the rifle. The right arm is thus left free for the use of lance or sword; the rifle in no way interferes with the action of the horse, as it would be liable to do were the present pattern adhered to, and the rider is in no way inconvenienced. Buckets of this type are in use in the 17th Bengal Lancers as an experiment. Their adoption necessitates the carrying of the sword on the offside, probably in front of the leg, a position which presents no difficulties in drawing the weapon after a little practice. For mounted infantry it would be desirable to attach the butt bucket on the offside and pass the right arm through the sling of the rifle, as more convenient in mounting and dismounting and not liable to interfere with the sidearm.

The armament of the mounted infantryman presents no difficulties; the best rifle procurable, with sidearm, is all that he needs. The question of the best arm for cavalry is a far more complex problem, resolving

Armament.

itself into a study of the rival virtues of lance and sabre. Both have their champions; innumerable instances can be quoted from military history when each has proved superior to the other. The lance is pre-eminent in the shock, it is a weapon of greatest prestige and deadly efficacy, especially in Asiatic warfare, but in the *mêlée* against mounted troops its superiority to the sword is by no means conclusively established; against the bayonet its reach gives it a strong claim over the sabre, but it is incontestably a hindrance and an impediment to the dismounted rôle of the cavalry soldier.

The present practice of carrying the lance in one hand when working on foot, and the rifle in the other, hampers the movements of the dismounted trooper, impedes the use of his firearm, and possesses no compensating advantages. He is obliged to deposit his lance prior to opening fire at every pause in his progress, and tax his memory not to leave it behind as he doubles from cover to cover.

The sword is open to none of these objections. It certainly interferes in some wise with the cavalryman's activity on foot, but to no serious extent; it in no way prevents his firing, is ready as a last argument in the assault upon a position, and can be used without difficulty in the right hand whilst the left hand grasps the rifle. The necessity for arming the dismounted trooper with a steel weapon of some kind is generally admitted; without it he can hardly come to close quarters, and his action can seldom be decisive in either attack or defence. Many reformers advocate the bayonet for cavalry, founding their belief on its proved efficacy in South Africa. But cavalry have a dual rôle to perform in Indian warfare, and as an *arme blanche* is necessary for both, it is obviously desirable to select one which fulfils its mission in both capacities, and so avoid multiplying weapons, entailing a peculiar training in the handling of each.

The bayonet is an arm especially devised for use at a particular juncture in the dismounted rôle. Weapons, like troops, the efficacy of which depends upon the coincidence of peculiar circumstances, scarcely justify their existence. The sword is only in the matter of reach less effective than the fixed bayonet, whilst in being available for the cut as well as the point, it can claim some measure of superiority.

The lance must always be an encumbrance to the soldier on foot when carrying and using his rifle, owing largely to the impracticability of attaching it to his person in such a manner as to have his hands free for the use of his firearm, and at the same time not interfere with his movements. The sabre then appears to be the only weapon, which effectually serves the purposes of both mounted combat and fire tactics. A shorter lance and more stable method of attachment may render the retention possible of a weapon which has so many valuable attributes, and is so well suited otherwise to local cavalry conditions. The trooper, however, is undoubtedly over well provided in *armes blanches*, the sword being carried to supplement the lance in the *mêlée*. The principle of one arm existing as an auxiliary to another might be

extended indefinitely, and the accumulation of weapons for use in the rôle which is of least frequent occurrence is working upon unsound lines. It is better policy to have few arms and perfect men in their use, than many combined, with a superficial acquaintance and consequently little confidence with regard to any.

In connection with the problem of how the horse soldier's kit is to be carried, two alternatives present themselves: either to load the horse with all that he or his rider can require, or to provide sufficient transport of a suitable type for the necessities of both. The former course converts the troop horse into a transport animal, able no doubt to acquit himself creditably under favourable conditions,—easy going, short distances, and slow pace, but liable to exhaustion and inevitable collapse when the exigencies of the duty on which he is engaged involve long hours under the saddle, with much fast work over a trying country. Until recently in our service transport has been economised, and the horse loaded up with every contrivance which ingenuity could suggest, upon a saddle especially constructed on the hold-all principle, so much so, that in marching order no little skill has been requisite in gaining and quitting the saddle. Of course the disadvantages of the system have been fully recognised, and steps taken towards lightening the charger's burden. The heavy cloak and cape are unnecessary: the short poshteen or a warm coat will suffice until the arrival of warmer wraps: one blanket folded under the saddle will similarly be adequate as a temporary measure for the horse. Spare shoes, picketting gear, hoof picks and the like can almost invariably be carried on the transport following the squadrons or companies of mounted infantry. A feed should be carried, the grass net usually not. Special measures must be devised for special conditions, but few of our probable theatres of war are entirely devoid of some kind of fodder.

De Wet and his fellow commandants, by their use of the light and capacious Cape cart as a transport conveyance, initiated the idea of fast moving vehicles to relieve the troop horse and enable his rider to obtain full value from his mobility. Whatever the class of transport decided upon may be as best suited to the peculiar terrain to be negotiated,—whether pack mules or tongas or the like—the principle of the transport existing to ease the horse, and not the horse to diminish the transport, is a sound basis on which to proceed.

A wrap and a feed for horse and man is all that is actually indispensable. Horses can be linked by their head ropes in rings, or in lines with the animals at the extremities of the line tethered to pegs carried, a few in each troop, for the purpose, as a temporary measure.

The broad neck-collar issued to mounted troops at the Cape to replace the head-collar for picketting purposes was hardly a success. It afforded no means by which an animal could be seized or effectually controlled, the less so when running loose or viciously inclined. In

addition, horses were frequently in danger of being choked by running back or throwing up their heads and thus pulling the upper portion of the band over their ears, whilst the lower was drawn tight across the throat, in which position it stuck until removed.

The best contrivance for service appears to be a stout head-collar, suitable for picketting, to which by means of spring hooks can be affixed the bit with reins attached. The wallet should be abolished as superfluous, as tending to weight the saddle in front, and so cause crushed withers, and as inconvenient for the use of the reins. The havresack, or a small saddlebag behind the right thigh, are equally well adapted for carrying some food for the rider. The latter appears preferable, as with belts, ammunition, and probably water-bottle, the trooper will be somewhat heavily weighted already. Sword and cornbag and satchel on the offside would balance rifle and bucket on the near. The nosebag is an article of greatest importance on service; without it but a small proportion of the feed finds its way to the horse's stomach; a leather-shod pattern not easily kicked out by the animal's foot, or worn by contact with the ground serves the purpose best.

Breastplates are a relic of the days when a guy rope round the neck and another round the tail were necessary to keep the saddle in position. Now that the fitting of saddlery receives so much attention, except in cases of horses of abnormal conformation, the breastplate might follow the crupper into disuse.

With fewer articles to attach to it the size of the saddle can be reduced, and the amount of leather curtailed.

A sharp distinction should be drawn betwixt the parade equipment of man and horse and that intended for service. Throat plumes, breastplates, bosses and chain reins may well be retained for ceremonial purposes, but serve no useful purpose in the field.

A mild bit with single rein is all that the mounted infantryman requires to control his cob.

It is thought that the present cavalry bit is far too severe for the majority of horses, and tends, in spite of all precautions, to spoil their jumping, to irritate and unsteady them. Really good hands are a blessing vouchsafed to few, and without them so powerful a bit either causes a horse to fret continually, or by making his mouth callous renders him unmanageable.

Machine guns add greatly to the fire power of mobile troops; mounted infantry should be well provided with them, and thoroughly trained in their use. It is open to question whether cavalry are not, on the whole, better without machine guns. Anything that detracts from their mobility should be unhesitatingly omitted from their equipment; machine guns are unquestionably a responsibility, and may often be a hindrance and a danger to fast moving bodies.

To conclude this medley of suggestion and comment, a final article of equipment would be recommended, on the quality of which, for cavalry work especially, too great stress can hardly be placed, *viz.*, a really good telescope or pair of field-glasses for every officer and non-commissioned officer.

We are taught that the goal for which all arms of the service must strive in warfare is superiority of force at the decisive point.

The decisive point or points, strategically speaking, will probably have been decided on maps of the proposed theatre of war long before the commencement of hostilities. The enemy, it is safe to assume, realises the weak spot in his system as well, if not better, than his opponents, and will have taken measures to be strong in that neighbourhood. Finesse becomes necessary to draw him from his guard by arousing his anxiety for other points in his defence apparently more directly threatened. It is in assisting strategy by feints of the kind so successful in 1897 on the Shakot Pass when the Malakand was the real objective that mobile troops can be of so great a value. A forced march or two and the cavalry and mounted infantry are back at the decisive point, leaving but a sufficient force behind to postpone the enemy's enlightenment. Without mobility of a high order finesse is an impossibility, be the project in view the crossing of a river, the forcing of a pass, the covering of a column retiring in the presence of the enemy, or indeed in almost any of the great operations of war. The decisive point, tactically, is seldom a constant one throughout an action. The transference of fire power to the point which developments indicate as decisive, so as to arrive in time, involves in a modern battle line, great rapidity of movement.

The mounted arms, if ably handled, confer the power of the initiative from the first, as Von Moltke proved in 1870 and Roberts in 1900. In a war with Russia on our North-West Frontier there is little doubt that our retention of the initiative at the commencement of operations would be very much imperilled, should we allow ourselves to be outmatched in cavalry, mounted infantry, and mobile guns.

In Strategy as in Tactics, then, the mounted arms have their part, and an important one, the main essential to their success being sufficient acquaintance with their possibilities and their characteristics on the part of those at whose disposal they are, to enable them to be employed confidently and judiciously.

The subject with which this essay deals is at the present time the field of so much controversy, owing to the onward march of modern ideas and methods that it would be a bold man, or rather perhaps a phenomenally self-confident one, who could feel himself justified in asserting, when discussing the rôles, training, and equipment of cavalry and mounted infantry, that "This is so" or "That is the best possible method"; the most that the uninspired can effect is an honest endeavour to offer a carefully weighed opinion founded upon common sense and the study of recent campaigns.

HORSE-BREEDING IN INDIA.

BY GENERAL SIR JOHN WATSON, V.C., K.C.B.

In April, 1899, I caused to be printed in the shape of a pamphlet (for private circulation only) my opinions on horse-breeding in India, and I sent a few copies to the officers chiefly concerned in the horsing of our army. Since then the South African war has taken place and emphasized in a practical manner the helplessness of an army badly supplied with remounts, and lately the Government of India has assembled a commission to enquire into the whole subject. The report of that commission was issued in July, 1901, and as I see that it has been freely commented on by both English and Indian newspapers, it is open to me to do so likewise, and I trust that the Editor of the United Service Journal will not hesitate to publish my remarks for I am sure that there must be many officers in India who appreciate the great importance of the subject, who wish to hear every man's opinion before they form their own. I am far from asserting that my own views are the correct ones; I am like other people liable to error, and my only apology for publishing them is that I have watched our horse breeding operations for fifty years.

"Accordingly there arose a host of experimenters, most of them unacquainted with the first principles which govern reproduction, who proceeded headlong in the blind hope that chance would afford them that happy solution which they were unable to ask of science and which chance after all did not give them."

The above is an extract taken from an article written in 1853 by a French gentleman, President of the Agricultural Society of Loire and Cher, and translated for the Journal of the Royal Agricultural Society of England and published in its volume No. XIV; and although it has reference only to sheep-breeding in France, yet there is in it so much to guide all who are interested in the reproduction of animal life that I commend the perusal of it to those who desire to master the science of horse-breeding in India, that they may not trust to the happy chance.

I rather object to the application of the word "science" to horse-breeding; certainly it is not an "exact science," whereas the production of all things beautiful and useful is an "Art" though "Art" is always capable of extension and development.

We learn from the French writer that the endeavour, carried on for many years in France to improve the very ancient breeds of French sheep by the introduction of English rams of far newer breeds, proved an absolute failure; thus the writer says:—

"In fact the principle of antiquity or purity of race is what has most influence upon crosses; the Leicester and other rams of mixed origin, being of modern origin in comparison with our French

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breeds, and especially with the Merino, whose source is lost in the night of ages their influence must be and is in fact weaker than that of the mother."

I am tempted to introduce here a paragraph from a letter I wrote to the Government of India in 1896 before I had read the French breeders' opinion :—

"I can well understand how generation after generation of British officers when they see for the first time the beautiful mares of Marwar and Beloochistan exclaim with enthusiasm :

"Let us send for the sons of ' Hermit ' and ' Blair Athol ' to mate with these mares, for I was just as keen on doing so myself 20 years ago, but the Marwar mare has an ancestry compared with which the English Thorough-bred is but a mushroom and a mongrel, and although the first progeny of the two may give rise to hope and pride yet their great grandchildren (if they have any) will be nothing worth."

The French writer tells the same story of sheep breeding.

Let no one say that sheep-breeding in France can teach nothing with regard to horse-breeding in India, for the reproduction of all animal life is subject to certain laws of nature, inexorable laws which must be studied by those who wish for success in breeding horses, sheep, or any other kind of animal, and to such I again commend a perusal of the French gentleman's article and a consideration of the means by which he eventually succeeded in fixing a type capable of reproducing itself.

On reading through the history of our horse-breeding operations in India during the past century I can nowhere find any reference to the possibility of mixing the blood of different races or families of horses with advantage or otherwise ; it appears to have been treated rather as a joiner's than a horse-breeder's art, and as if legs or shoulders of one pattern fitted on to legs or shoulders of another pattern the result would certainly be right. This nowhere shows itself more strongly than in the pronouncement of the Inspector General, Civil Veterinary Department in India, in his annual administration report for 1896-97. where he says :—

"Take the pure indigenous mare ; she should first be crossed by Arab sires to counteract many of the faults which she possesses. Having accomplished this we can then have one or two strains of hackney blood to give the mare size of barrel so essential to the carrying of a foal ; having succeeded in this we have our brood mare and then Arab or Thorough-bred should be continued with in order to get horses suitable for army purposes."

I quote this in support of what I have said, viz, that horse-breeding has been carried on in India more as a joiner's than a breeder's art. Is it not so ?

I turn now to other reasons which it appears to me have been the cause of our failure to produce horses enough to meet our army requirements ; and first and foremost I say it is that our endeavours to create an Anglo-Indian type of horse capable of reproducing itself, by the introduction of English sires of all descriptions, has led by slow degrees to constant deterioration in the produce and infertility in the mares of the country, and infertility in mares puts a stop to horse-

breeding in all countries. It does not require much arithmetic to prove that if only one mare in four produces a foal, it means ruin, but that if four mares produce three foals, there may be a profit; yet all statistics go to show that the former is the real state of the case.

In 1891 the Commander-in-Chief (Lord Roberts) wrote that "it was the mismanagement, not the principle of the studs, which was in fault, for the horses were as good as could be wished for but their price was far beyond what any Government could afford to pay." Taking leave to differ with so high an authority, I say that whether there was mismanagement or not, the real cause of the remounts running to such an inordinately high figure was, that the mares from constant crossing with English blood had become infertile and we had therefore to maintain an enormous number to produce the limited supply of good remounts which we did.

It is interesting to compare the recommendation of General Troup's commission in 1869 with that of General Tyler's in 1900.

General Troup's.

But if its recommendations are attended to, it is confidently anticipated that a most marked improvement will be effected in the next ten years.

* * * * *

2nd.—That more Trotter stallions be imported as soon as possible.

3rd.—That no more Thorough-bred stallions be purchased or sent into the North-West Provinces.

General Tyler's.

The recommendations of the committee as regards stallions are that the majority of the imperial stallions should be thorough-bred English or Australians, the rest being Arabs of true desert type.

* * * * *

Incalculable harm has been done by the introduction of the hackney stallion.

This divergence of opinion between the recommendations of the two commissions is singular. It is not the hackney more than the thorough-bred sire that has done the harm, but the English horse whose blood is not intended by nature to mingle with any *permanent* advantage with that of the Asiatic mare. English blood has never done so with any other class of animal.

In reply to this argument it has been said that the introduction of Arab sires into England 200 years ago created our present thorough-bred race horse, but there are two replies to this argument; first, that there was but one cross of the Arab sire on English mares and that the number of those sires was very limited; the cross was not persisted in, as it has been in India for we have persisted in the indiscriminate use of the English horse since we first commenced our operations.

Secondly, as proved by the French breeder (and many others) the use of the sires of comparatively new breeds on dams of ancient breeds is of no avail, and I suppose that we may take the reverse operation to be correct, *viz.*, that the use of sires of ancient breeds on dams of new breeds is most impressive, thus the Arab sire though used only once on English mares has left a mark which cannot be wiped out.

In 1869 General Troup's commission urged the importation of the hackney stallion and the disuse of thorough-breds; thirty years later another commission reverses the recommendations of the first, and if we look through the writings of the last century we shall see that whenever failure in the production of remounts occurred, a change in the class of stallion to be imported was the first thing called for, the blood of the mares called for little consideration, every class of English stallion was called for alternately and all with the same result, and the deduction from this seems to be, that it has not been any particular class of stallion that has failed to give permanence to our breeding, or to improve the horse stock of the country, but that English horses of all classes have.

Had "Moorcroft" lived a few years longer he would perhaps have found this out, for he wrote :

This want of permanency in breeding is well worth investigating, it shews most clearly that in former plans something of essential consequence has been overlooked or neglected, if stability be not given, interior horse-breeding will be illusory.

It cannot be said that the falling off in the numbers of good remounts has been due to the inferior quality of the thorough-bred English stallion for when General Troup's commission inspected them in 1869 they classed

66 of them as	General Tyler's commission inspected 71 and classed them as
17 Good.	28 Very good.
7 Fair.	28 Good.
20 Congenitally unfit.	10 Fair.
4 Indifferent.	5 Bad.
18 Bad.	—
—	71 None congenitally unfit.
66	— Shewing a very great improvement in quality of the stallions imported in later years.
—	

Turning again to the question of fertility or infertility I find but little enquiry in the commission's report on this all-important question. Two or three years ago an officer of the Bengal Cavalry was deputed by the Government of India to spend a year and a half in some of the breeding districts of the Punjab and enquire into the cause of the infertility, but for some reason or another he spent only four months in visiting two districts of the Punjab and one in the North-West Provinces and his report was more a census of the existing stock than a patient enquiry into the cause of infertility.

Statistics for many years past however show that in some districts infertility exists to the extent of one foal only to four mares and if this is true nothing can prevent the industry from dying out. This infertility is not so noticeable in districts west of the Indus as it is in those where our operations have been carried out for a longer period; it may be that the effect is not perceptible for several gener-

ations, but if the statistics of the last fifty years are any guide to the question there is little doubt about it and if it exists we need look for no other cause for the decay of the industry.

General Troup's commission reported thus in 1869:—

"Horse-breeding also appears to be a favourite pursuit of the population as it is profitable to the small farmers."

General Tyler's commission in 1900 reports:—

"India as a rule is not a country in which horse or mule-breeding is maintained for the love of the thing."

Thus there seems to be a change in the feeling of the population in the last thirty years and if infertility exist to the extent reported we cannot wonder at it.

I have lately been interested in reading a pamphlet on horse-breeding in Cape Colony. It will be remembered by all old officers that forty years ago we were largely supplied in India with excellent remounts from the Cape, but that the supply suddenly ceased. Now the writer of the pamphlet I have alluded to states that when the Cape belonged to the Dutch they stocked it with Arabs, Barbs and other horses of oriental blood. When the English took possession in 1804 large numbers of English stallions were at once sent out: excellent results were obtained and India drew largely for remounts on the Cape; but there appears to have been no permanence in the breed, for it rather suddenly ceased just about the time that our own studs in India began to fail. Could it have been possible that the same cause affected both, the want of permanence in the cross of English stallions on oriental mares; I have not been in South Africa and I have no means of verifying this statement, but it would be well for the officer charged with horse-breeding in India to enquire exhaustively into it: it might teach a lesson.

And who is to be the officer charged with this important duty? I see that General Tyler's commission recommend that he should be a major-general; I hope that he may be a young one, and live long to carry on the work, but he will not live long enough, I fear, to see the success of this operation. He can but lay the foundation for his successors in after years to build upon; may his foundations be truly laid.

The commission recommends that a stud be formed of 400 brood mares to make a start with, but the mares are to be drawn from different classes, no very specific recommendations are made as to their breeding; this will be left to the discretion of the major-general, who will have some difficulty in ascertaining their pedigrees, without which he will have no accurate knowledge of the result of his breeding; the stud will of course be conducted on a very accurate system of record and register, so that the results of all crossing may be positively known at the end of the first twenty-five or thirty years.

The recommendation that a small stud of 15 or 20 mares be established in Kathiawar for the purpose of fostering the Kathiawar and Marwari breeds is very good, as far as it goes, but it does not go far enough. The commission says that "drastic measures" are required, and that the necessity of fostering the pure native breeds is important as the true foundation stock of India; "drastic measures"

to this end would seem to point to a stud of the kind in every province where a pure native breed exists.

In May, 1887, and again on the 25th August, 1888, Colonel Hallen read papers on horse-breeding at the United Service Institution at Simla in which he gave an account of 13 distinct breeds of Indian horses; some of these, especially the Dhunni and Beloochi, are surely worth fostering in studs before they are crossed out of existence. I forget whether Colonel Hallen included in the 13 breeds the "Bheema-tuddi" horse of the Deccan; I have lately read a letter written from Poona more than one hundred years ago giving a very excellent account of this valuable breed; it has disappeared before our operations but some specimens may still be found if searched for. Pure bred mares of any ancient race are invaluable to us now if our object is to spread numbers of good small horses over the country leaving the larger remount to be bred in Government studs.

A few words now with regard to the different classes of stallions may be of use to students, and first the *Arab*. The commission, I am glad to see, insist upon his purity of blood and denounce the use of any that for the sake of greater size have been in any way crossed. This view is confirmed by that most experienced Arab breeder, Mr. Wilfred Blunt, who breeds largely in Sussex; he said publicly last year that his ambition had been to increase the height of the Arab by breeding him in England, but that he had found it to be a mistake, and never now wished to breed a pure Arab over 14-2 in height. Kept absolutely pure the breed flourishes in Sussex and all countries come to buy them; this leads me to remark, that the Government of India should no longer trust for its supply of Arab stallions to the import market of Bombay which will not supply our want for the next century and the Indian Government would do well to start an Arab breeding stud in the Deccan or Rajputana; its value to the country in years to come would be enormous, for if the import from Arabia ceased and we had no Arabs of our own we should be without the most valuable breed of horses for military purposes in the world.

Secondly,—the *Thorough-bred English Stallion*. This horse is invaluable for breeding remounts from pure bred mares, but he cannot create a "type of Anglo-Indian horse capable of reproducing itself" and therefore should not be used with any expectation of his doing so. All writers describe the Thorough-bred English horse required for India as one not more than 15-2 in height with 8 inch bone below the knee and 72 inch girth, faultless in hoof and limb and shape. I quite agree with those writers, but such horses are not bred in England; if found, as they may be occasionally, they may almost be said to be the "*Lusus Naturæ*" of the Thorough-bred family; it is difficult to find perfect horses under 15-3, but those under 15-2, are for the most part weak somewhere. There are exceptions of course.

Thirdly,—the *Hackney*, or Norfolk Trotter as he used to be called.

This class of stallion was in great favour in India for many years, but is now "out of fashion" and I think has been unfairly condemned. I am not an *advocate* for him and have always professed to hold a perfectly impartial opinion between him and his thorough-bred rival, for without any trial stud or perfect system of registering the result

of different crosses generation after generation no reliable opinion is possible ; but he is undoubtedly a horse of very sound and hardy constitution and America, France, and all countries come to England to buy him for their studs. In Sir E. Collen's memorandum of November, 1897, will be found extracts from the annual report of the Civil Veterinary Department, which are interesting and show that the hackney stallion had not been condemned as late as 1895-96 and one extract he gives from the report of the Superintendent, North-West Provinces and Oudh, of that year reads thus—

"The semindars of the North-West still retain their old love for the Norfolk Trotter, or hackney, the Arabs and Thorough-breds are not favourites, natives say that they are more difficult to put in condition and that their young stock are delicate."

However, General Tyler's commission condemns them utterly and states that "incalculable harm has been done by their introduction and also says that the type of horse of this class received from England has been inferior and coarse."

Now the hackney is a very different type of horse to the thoroughbred, but he is not coarse ; his ancestry is as old as the thoroughbred and none have been sent to India since 1892 that were not pure bred hackney horses and registered in the hackney stud book. Of 73 stallions sent out since 1892 21 have been by the most celebrated Champion sires such as Rufus, Cadet, Danegelt and Firaway and many have been prize winners at shows ; it is a pity that the commission did not give us one more photograph of a hackney stallion although as they carry very heavy coats in the winter season they would have perhaps shown an idea of coarseness.

The hackney stallion may be trusted to get excellent remounts out of pure bred mares, but he cannot create an Anglo-Indian type of horse out of a line of mongrels, and should be used for first crosses only, to get remounts not brood stock.

Fourthly—the *Stud-bred Stallion*, as distinct from the country stallion, of pure Indian blood.

The stud-bred stallion is usually the product of an English sire and a dam of any breed and has sometimes two or more crosses of English blood in him ; in 1851 General Gilbert condemned the use of stud-bred sires, but in 1869 General Troup's commission placed him in value as second to "Trotters" and superior to Thorough-bred English. Since then he seems to have gradually died out, for in late returns of the department we find that very few have been in use ; this of course is natural as with the abolition of the studs no more have been produced. General Tyler's commission now recommends their re-introduction and proposes to raise a breed of the same from ten thoroughbred English and Arab stallions and 400 mares of sorts, and that stallions so bred and distributed throughout the breeding districts, will be successful in creating plenty of remounts, and saving Government the expense of importing stallions from England. This may or may not prove successful, but I should hesitate to try it myself. The commission is very strongly of opinion

instilled before they get there. Men who are liable to lose their heads will not be reassured by having to fumble in their pouches or bandoliers for every round fired. The point is to make loading and firing easier for those who are not flurried, so that opportunities for a succession of snapshots may not be missed. Quick firing is the main essential of modern fire tactics, and quick firing means quick loading. Both necessitate an ample supply of ammunition.

The bandolier, the kind with leather flaps and clip divisions, is the most convenient receptacle for the most convenient method of carrying ammunition, which to load. The waistbelt should hold one hundred rounds, the front portion of the shoulder strap, which should be of fairly broad leather, can be bandoliered to take another fifty. The portion of the latter which crosses the back to be left plain to admit of the slinging of the rifle when required.

The question of how to carry the rifle, whether on the person or in a bucket attached to the saddle, has been much discussed. The horse has to carry the rifle in any case. Is it better to risk the proportion of sorebacks which the rifle carried in a bucket of any kind is said to occasion, or to tire out the man who at the end of a long march, with 150 rounds of ammunition strapped to his person, may have to dismount and double for long distances, rifle in hand, whilst his horse rests eased of his burden? The object is to bring the soldier as well as his horse, fit and unwearied into action, and except when the use of the rifle is frequent and imminent, it should rest in a bucket of a type designed and adjusted so as not to give sorebacks. The butt bucket of the kind found so useful at the Cape commends itself as the most suitable means of carrying the rifle both for cavalry and mounted infantry, but attached otherwise than in the manner in vogue there. The bucket should be slung attached to the saddle belt of the left thigh, at such a height that the muzzle of the rifle, which stands upright in it, shall be approximately on a level with the top of the left shoulder and behind it, the left arm being passed through a leather loop attached to the upper swivel of the rifle. The right arm is thus left free for the use of lance or sword; the rifle in no way interferes with the action of the horse, as it would be liable to do were the present pattern adhered to, and the rider is in no way inconvenienced. Buckets of this type are in use in the 17th Bengal Lancers as an experiment. Their adoption necessitates the carrying of the sword on the offside, probably in front of the leg, a position which presents no difficulties in drawing the weapon after a little practice. For mounted infantry it would be desirable to attach the butt bucket on the offside and pass the right arm through the sling of the rifle, as more convenient in mounting and dismounting and not liable to interfere with the sidearm.

The armament of the mounted infantryman presents no difficulties; the best rifle procurable, with a sword, is all that he needs. The question of the best arm for cavalry is a far more complex problem, requiring

itself into a study of the rival virtues of lance and sabre. Both have their champions; innumerable instances can be quoted from military history when each has proved superior to the other. The lance is pre-eminent in the shock, it is a weapon of greatest prestige and deadly efficacy, especially in Asiatic warfare, but in the *mêlée* against mounted troops its superiority to the sword is by no means conclusively established; against the bayonet its reach gives it a strong claim over the sabre, but it is incontestably a hindrance and an impediment to the dismounted rôle of the cavalry soldier.

The present practice of carrying the lance in one hand when working on foot, and the rifle in the other, hampers the movements of the dismounted trooper, impedes the use of his firearm, and possesses no compensating advantages. He is obliged to deposit his lance prior to opening fire at every pause in his progress, and tax his memory not to leave it behind as he doubles from cover to cover.

The sword is open to none of these objections. It certainly interferes in some wise with the cavalryman's activity on foot, but to no serious extent; it in no way prevents his firing, is ready as a last argument in the assault upon a position, and can be used without difficulty in the right hand whilst the left hand grasps the rifle. The necessity for arming the dismounted trooper with a steel weapon of some kind is generally admitted; without it he can hardly come to close quarters, and his action can seldom be decisive in either attack or defence. Many reformers advocate the bayonet for cavalry, founding their belief on its proved efficacy in South Africa. But cavalry have a dual rôle to perform in Indian warfare, and as an *arme blanche* is necessary for both, it is obviously desirable to select one which fulfils its mission in both capacities, and so avoid multiplying weapons, entailing a peculiar training in the handling of each.

The bayonet is an arm especially devised for use at a particular juncture in the dismounted rôle. Weapons, like troops, the efficacy of which depends upon the coincidence of peculiar circumstances, scarcely justify their existence. The sword is only in the matter of reach less effective than the fixed bayonet, whilst in being available for the cut as well as the point, it can claim some measure of superiority.

The lance must always be an encumbrance to the soldier on foot when carrying and using his rifle, owing largely to the impracticability of attaching it to his person in such a manner as to have his hands free for the use of his firearm, and at the same time not interfere with his movements. The sabre then appears to be the only weapon, which effectually serves the purposes of both mounted combat and fire tactics. A shorter lance and more stable method of attachment may render the retention possible of a weapon which has so many valuable attributes, and is so well suited otherwise to local cavalry conditions. The trooper, however, is undoubtedly over well provided in *armes blanches*, the sword being carried to supplement the lance in the *mêlée*. The principle of one arm existing as an auxiliary to another might be

extended indefinitely, and the accumulation of weapons for use in the rôle which is of least frequent occurrence is working upon unwearied lines. It is better policy to have few arms and perfect men in their use, than many combined, with a superficial acquaintance and consequently little confidence with regard to any.

In connection with the problem of how the horse soldier's kit is to be carried, two alternatives present themselves: either to load the horse with all that he or his rider can require, or to provide sufficient transport of a suitable type for the necessities of both. The former course converts the troop horse into a transport animal, able no doubt to acquit himself creditably under favourable conditions,—easy going, short distances, and slow pace, but liable to exhaustion and inevitable collapse when the exigencies of the duty on which he is engaged involve long hours under the saddle, with much fast work over a trying country. Until recently in our service transport has been economised, and the horse loaded up with every contrivance which ingenuity could suggest, upon a saddle especially constructed on the hold-all principle, so much so, that in marching order no little skill has been requisite in getting and quitting the saddle. Of course the disadvantages of the system have been fully recognised, and steps taken towards lightening the charger's burden. The heavy cloak and cape are unnecessary; the short poshteen or a warm coat will suffice until the arrival of warmer wraps: one blanket folded under the saddle will amply be adequate as a temporary measure for the horse. Spare shoes, packing gear, hoof-picks and the like can almost invariably be carried on the transport following the squadrons or companies of mounted infantry. A feed should be carried, the grass net usually not. Special measures must be devised for special conditions, but few of our probable theatres of war are entirely devoid of some kind of fodder.

De Wet and his fellow commandants, by their use of the light and capacious Cape cart as a transport conveyance, initiated the idea of fast moving vehicles to relieve the troop horse, and enable his rider to obtain full value from his mobility. Whatever the class of transport decided upon may be as best suited to the peculiar terrain to be negotiated,—whether pack mules or tongas or the like—the principle of the transport existing to ease the horse, and not the horse to diminish the transport, is a sound basis on which to proceed.

A wrap and a feed for horse and man is all that is actually indispensable. Horses can be linked by their head ropes in rings, or in lines with the animals at the extremities of the line tethered to pegs carried, a few in each troop, for the purpose, as a temporary measure.

The broad neck-collar issued to mounted troops at the Cape to replace the head-collar for picketting purposes was hardly a success. It afforded no means by which an animal could be seized or effectually controlled, the less so when running loose or viciously inclined. In

addition, horses were frequently in danger of being choked by running back or throwing up their heads and thus pulling the upper portion of the band over their ears, whilst the lower was drawn tight across the throat, in which position it stuck until removed.

The best contrivance for service appears to be a stout head-collar, suitable for picketting, to which by means of spring hooks can be affixed the bit with reins attached. The wallet should be abolished as superfluous, as tending to weight the saddle in front, and so cause crushed withers, and as inconvenient for the use of the reins. The havresack, or a small saddlebag behind the right thigh, are equally well adapted for carrying some food for the rider. The latter appears preferable, as with belts, ammunition, and probably water-bottle, the trooper will be somewhat heavily weighted already. Sword and corn-bag and satchel on the offside would balance rifle and bucket on the near. The nosebag is an article of greatest importance on service; without it but a small proportion of the feed finds its way to the horse's stomach; a leather-shod pattern not easily kicked out by the animal's foot, or worn by contact with the ground serves the purpose best.

Breastplates are a relic of the days when a guy rope round the neck and another round the tail were necessary to keep the saddle in position. Now that the fitting of saddlery receives so much attention, except in cases of horses of abnormal conformation, the breastplate might follow the crupper into disuse.

With fewer articles to attach to it the size of the saddle can be reduced, and the amount of leather curtailed.

A sharp distinction should be drawn betwixt the parade equipment of man and horse and that intended for service. Throat plumes, breastplates, bosses and chain reins may well be retained for ceremonial purposes, but serve no useful purpose in the field.

A mild bit with single rein is all that the mounted infantryman requires to control his cob.

It is thought that the present cavalry bit is far too severe for the majority of horses, and tends, in spite of all precautions, to spoil their jumping, to irritate and unsteady them. Really good hands are a blessing vouchsafed to few, and without them so powerful a bit either causes a horse to fret continually, or by making his mouth callous renders him unmanageable.

Machine guns add greatly to the fire power of mobile troops; mounted infantry should be well provided with them, and thoroughly trained in their use. It is open to question whether cavalry are not, on the whole, better without machine guns. Anything that detracts from their mobility should be unhesitatingly omitted from their equipment; machine guns are unquestionably a responsibility, and may often be a hindrance and a danger to fast moving bodies.

To conclude this medley of suggestion and comment, a final article of equipment would be recommended, on the quality of which, for cavalry work especially too great stress can hardly be placed, *viz.*, a really good telescope or pair of field-glasses for every officer and non-commissioned officer.

We are taught that the goal for which all arms of the service must strive in warfare is superiority of force at the decisive point.

The decisive point or points, strategically speaking, will probably have been decided on maps of the proposed theatre of war long before the commencement of hostilities. The enemy, it is safe to assume, realises the weak spot in his system as well, if not better, than his opponents, and will have taken measures to be strong in that neighbourhood. Finesse becomes necessary to draw him from his guard by arousing his anxiety for other points in his defence apparently more directly threatened. It is in assisting strategy by feints of the kind so successful in 1897 on the Shakot Pass when the Malakand was the real objective that mobile troops can be of so great a value. A forced march or two and the cavalry and mounted infantry are back at the decisive point, leaving but a sufficient force behind to postpone the enemy's enlightenment. Without the help of a high order finesse is an impossibility, be the project in view the crossing of a river, the forcing of a pass, the covering of a column retiring in the presence of the enemy, or indeed in almost any of the great operations of war. The decisive point, tactically, is seldom a constant one throughout an action. The transference of fire power to the point which developments indicate as decisive, so as to arrive in time, involves in a modern battle line, great rapidity of movement.

The mounted arms, if ably handled, confer the power of the initiative from the first, as Von Moltke proved in 1870 and Roberts in 1900. In a war with Russia on our North-West Frontier there is little doubt that our retention of the initiative at the commencement of operations would be very much imperilled, should we allow ourselves to be outmatched in cavalry, mounted infantry, and machine guns.

In Strategy as in Tactics, then, the mounted arms have their part, and an important one, the main essential to their success being sufficient acquaintance with their possibilities and their characteristics on the part of those at whose disposal they are, to enable them to be employed confidently and judiciously.

The subject with which this essay deals is at the present time the field of so much controversy, owing to the onward march of modern ideas and methods, that it would be a bold man, or rather perhaps a phenomenally self-confident one, who could feel himself justified in asserting, when discussing the rules, training, and equipment of cavalry and mounted infantry, that "This is so" or "That is the best possible method"; the most that the unaspired can effect is an honest endeavour to offer a carefully weighed opinion founded upon common sense and the study of recent campaigns.

HORSE-BREEDING IN INDIA.

BY GENERAL SIR JOHN WATSON, V.C., K.C.B.

In April, 1899, I caused to be printed in the shape of a pamphlet (for private circulation only) my opinions on horse-breeding in India, and I sent a few copies to the officers chiefly concerned in the horsing of our army. Since then the South African war has taken place and emphasized in a practical manner the helplessness of an army badly supplied with remounts, and lately the Government of India has assembled a commission to enquire into the whole subject. The report of that commission was issued in July, 1901, and as I see that it has been freely commented on by both English and Indian newspapers, it is open to me to do so likewise, and I trust that the Editor of the United Service Journal will not hesitate to publish my remarks for I am sure that there must be many officers in India who appreciate the great importance of the subject, who wish to hear every man's opinion before they form their own. I am far from asserting that my own views are the correct ones; I am like other people liable to error, and my only apology for publishing them is that I have watched our horse breeding operations for fifty years.

"Accordingly there arose a host of experimenters, most of them unacquainted with the first principles which govern reproduction, who proceeded headlong in the blind hope that chance would afford them that happy solution which they were unable to ask of science and which chance after all did not give them."

The above is an extract taken from an article written in 1853 by a French gentleman, President of the Agricultural Society of Loire and Cher, and translated for the Journal of the Royal Agricultural Society of England and published in its volume No. XIV; and although it has reference only to sheep-breeding in France, yet there is in it so much to guide all who are interested in the reproduction of animal life that I commend the perusal of it to those who desire to master the science of horse-breeding in India, that they may not trust to the happy chance.

I rather object to the application of the word "science" to horse-breeding; certainly it is not an "exact science," whereas the production of all things beautiful and useful is an "Art" though "Art" is always capable of extension and development.

We learn from the French writer that the endeavour, carried on for many years in France to improve the very ancient breeds of French sheep by the introduction of English rams of far newer breeds, proved an absolute failure; thus the writer says:—

"In fact the principle of antiquity or purity of race is what has most influence upon crosses; the Leicester and other rams of mixed origin, being of modern origin in comparison with our French

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breeds, and especially with the Merino, whose source is lost in the night of ages their influence must be and is in fact greater than that of the mother."

I am tempted to introduce here a paragraph from a letter I wrote to the Government of India in 1896 before I had read the French breeders' opinion:—

"I can well understand how generation after generation of British officers when they see for the first time the beautiful mares of Marwar and Belochistan exclaim with enthusiasm:

"Let us send for the sons of 'Hermit' and 'Blair Athol' to mate with these mares, for I was just as keen on doing so myself twenty years ago, but the Marwar mare has an ancestry compared with which the English Thorough-bred is but a mushroom and a mongrel, and although the first progeny of the two may give rise to hope and even yet their great grandchildren (if they have any) will be nothing worth."

The French writer tells the same story of sheep breeding.

Let no one say that sheep-breeding in France can teach nothing with regard to horse-breeding in India, for the reproduction of all animal life is subject to certain laws of nature, inexorable laws which must be studied by those who wish for success in breeding horses, sheep, or any other kind of animal, and to such I again commend a perusal of the French gentleman's article and a consideration of the means by which he eventually succeeded in fixing a type capable of reproducing itself.

On reading through the history of our horse-breeding operations in India during the past century I can nowhere find any reference to the possibility of mixing the blood of different races or families of horses with advantage or otherwise; it appears to have been treated rather as a joiner's than a horse-breeder's art, and as if legs or shoulders of one pattern fitted on to legs or shoulders of another pattern the result would certainly be right. This now remains itself more strongly than in the pronouncement of the Inspector General, Civil Veterinary Department in India, in his annual annualisation report for 1896-97 where he says:—

"Take the pure indigenous mare, she should first be crossed by Arab sires to counteract many of the faults which she possesses. Having accomplished this we can then have one or two strains of hucaney blood to give the mare size of barrel so essential to the carrying of a foal. Having succeeded in this we have our best mare and then Arab or Thorough-bred should be continued until in order to get horses suitable for army purposes."

I quote this in support of what I have said, viz. that horse-breeding has been carried on in India more as a joiner's than a breeder's art. Is it not so?

I turn now to other reasons which it appears to me have been the cause of our failure to produce horses enough to meet our army requirements, and first and foremost I say it is that our endeavours to create an Anglo-Indian type of horse capable of reproducing itself by the introduction of English sires of all descriptions, has led by slow degrees to constant deterioration in the produce and ultimately to the mares of the country, and indirectly in mares put a stop to horse-

breeding in all countries. It does not require much arithmetic to prove that if only one mare in four produces a foal, it means ruin, but that if four mares produce three foals, there may be a profit; yet all statistics go to show that the former is the real state of the case.

In 1891 the Commander-in-Chief (Lord Roberts) wrote that "it was the mismanagement, not the principle of the studs, which was in fault, for the horses were as good as could be wished for but their price was far beyond what any Government could afford to pay." Taking leave to differ with so high an authority, I say that whether there was mismanagement or not, the real cause of the remounts running to such an inordinately high figure was, that the mares from constant crossing with English blood had become infertile and we had therefore to maintain an enormous number to produce the limited supply of good remounts which we did.

It is interesting to compare the recommendation of General Troup's commission in 1869 with that of General Tyler's in 1900.

General Troup's.

But if its recommendations are attended to, it is confidently anticipated that a most marked improvement will be effected in the next ten years.

* * * * *

2nd.—That more Trotter stallions be imported as soon as possible.

3rd.—That no more Thorough-bred stallions be purchased or sent into the North-West Provinces.

General Tyler's.

The recommendations of the committee as regards stallions are that the majority of the imperial stallions should be thorough-bred English or Australians, the rest being Arabs of true desert type.

* * * * *

Incalculable harm has been done by the introduction of the hackney stallion.

This divergence of opinion between the recommendations of the two commissions is singular. It is not the hackney more than the thorough-bred sire that has done the harm, but the English horse whose blood is not intended by nature to mingle with any *permanent* advantage with that of the Asiatic mare. English blood has never done so with any other class of animal.

In reply to this argument it has been said that the introduction of Arab sires into England 200 years ago created our present thorough-bred race horse, but there are two replies to this argument; first, that there was but one cross of the Arab sire on English mares and that the number of those sires was very limited; the cross was not persisted in, as it has been in India for we have persisted in the indiscriminate use of the English horse since we first commenced our operations.

Secondly, as proved by the French breeder (and many others) the use of the sires of comparatively new breeds on dams of ancient breeds is of no avail, and I suppose that we may take the reverse operation to be correct, *viz.*, that the use of sires of ancient breeds on dams of new breeds is most impressive, thus the Arab sire though used only once on English mares has left a mark which cannot be wiped out.

In 1869 General Troup's commission urged the importation of the hackney stallion and the disuse of thorough-breds; thirty years later another commission reverses the recommendations of the first, and if we look through the writings of the last century we shall see that whenever failure in the production of remounts occurred, a change in the class of stallion to be imported was the first thing called for, the blood of the mares called for little consideration, every class of English stallion was called for alternately and all with the same result, and the deduction from this seems to be, that it has not been any particular class of stallion that has failed to give permanence to our breeding, or to improve the horse stock of the country, but that English horses of all classes have.

Had "Moorecroft" lived a few years longer he would perhaps have found this out, for he wrote :

This want of permanency in breeding is well worth investigating, it shows most clearly that in former plans something of essential consequence has been overlooked or neglected, if steadily be not given, inferior horse-breeding will be illusory.

It cannot be said that the falling off in the numbers of good remounts has been due to the inferior quality of the thorough-bred English stallion for when General Troup's commission inspected them in 1869 they classed

66 of them as

17 Good.

7 Fair.

20 Congenitally unfit.

4 Indifferent.

18 Bad.

—

66

—

General Tyler's commission inspected 71 and classed them as

28 Very good.

28 Good.

10 Fair.

5 Bad.

—

71 None congenitally unfit.

— Showing a very great improvement in quality of the stallions imported in later years.

Turning again to the question of fertility or infertility I find the little enquiry in the commission's report on this all-important question. Two or three years ago an officer of the Bengal Cavalry was deputed by the Government of India to spend a year and a half in some of the breeding districts of the Punjab and enquire into the cause of the infertility, but for some reason or another he spent only four months in visiting two districts of the Punjab and one in the North-West Provinces and his report was more a census of the existing stock than a patient enquiry into the cause of infertility.

Statistics for many years past however show that in some districts infertility exists to the extent of one foal only to four mares and if this is true nothing can prevent the industry from dying out. If infertility is not so noticeable in districts west of the Indus as it is in those where our operations have been carried out for a longer period; it may be that the effect is not perceptible for several genera-

ations, but if the statistics of the last fifty years are any guide to the question there is little doubt about it and if it exists we need look for no other cause for the decay of the industry.

General Troup's commission reported thus in 1869:—

"Horse-breeding also appears to be a favourite pursuit of the population as it is profitable to the small farmers."

General Tyler's commission in 1900 reports:—

"India as a rule is not a country in which horse or mule-breeding is maintained for the love of the thing."

Thus there seems to be a change in the feeling of the population in the last thirty years and if infertility exist to the extent reported we cannot wonder at it.

I have lately been interested in reading a pamphlet on horse-breeding in Cape Colony. It will be remembered by all old officers that forty years ago we were largely supplied in India with excellent remounts from the Cape, but that the supply suddenly ceased. Now the writer of the pamphlet I have alluded to states that when the Cape belonged to the Dutch they stocked it with Arabs, Barbs and other horses of oriental blood. When the English took possession in 1804 large numbers of English stallions were at once sent out: excellent results were obtained and India drew largely for remounts on the Cape; but there appears to have been no permanence in the breed, for it rather suddenly ceased just about the time that our own studs in India began to fail. Could it have been possible that the same cause affected both, the want of permanence in the cross of English stallions on oriental mares; I have not been in South Africa and I have no means of verifying this statement, but it would be well for the officer charged with horse-breeding in India to enquire exhaustively into it: it might teach a lesson.

And who is to be the officer charged with this important duty? I see that General Tyler's commission recommend that he should be a major-general; I hope that he may be a young one, and live long to carry on the work, but he will not live long enough, I fear, to see the success of this operation. He can but lay the foundation for his successors in after years to build upon; may his foundations be truly laid.

The commission recommends that a stud be formed of 400 brood mares to make a start with, but the mares are to be drawn from different classes, no very specific recommendations are made as to their breeding; this will be left to the discretion of the major-general, who will have some difficulty in ascertaining their pedigrees, without which he will have no accurate knowledge of the result of his breeding; the stud will of course be conducted on a very accurate system of record and register, so that the results of all crossing may be positively known at the end of the first twenty-five or thirty years.

The recommendation that a small stud of 15 or 20 mares be established in Kathiawar for the purpose of fostering the Kathiawar and Marwari breeds is very good, as far as it goes, but it does not go far enough. The commission says that "drastic measures" are required, and that the necessity of fostering the pure native breeds is important as the true foundation stock of India; "drastic measures"

to this end would seem to point to a stud of the kind in every province where a pure native breed exists.

In May, 1887, and again on the 25th August, 1888, Colonel Hatten read papers on horse-breeding at the United Service Institute at Simla in which he gave an account of 13 distinct breeds of Indian horses; some of these, especially the Dhunni and Belbochi are surely worth fostering in studs before they are crossed out of existence. I forget whether Colonel Hatten included in the 13 breeds the "Bhermatuddi" horse of the Deccan; I have lately read a letter written from Poona more than one hundred years ago giving a very excellent account of this valuable breed; it has disappeared before our operations but some specimens may still be found if searched for. Pure bred mares of any ancient race are invaluable to us now if our object is to spread numbers of good small horses over the country leaving the larger remount to be bred in Government studs.

A few words now with regard to the different classes of stallions may be of use to students, and first the *Arab*. The common view, I am glad to see, insist upon his purity of blood and denounce the use of any that for the sake of greater size have been in any way crossed. This view is confirmed by that most experienced Arab breeder, Mr. Wilfred Bunt, who breeds largely in Sussex; he said, perhaps last year that his ambition had been to increase the height of the Arab by breeding him in England, but that he had found it to be a mistake, and never now wished to breed a pure Arab over 14.2 in height. Kept absolutely pure the breed flourishes in Sussex and all countries come to buy them; this leads me to remark that the Government of India should no longer trust for its supply of Arab stallions to the import market of Bombay which will not supply our wants for the next century and the Indian Government would do well to start an Arab breeding stud in the Deccan or Rajputana; its value to the country in years to come would be enormous, for if the importation of Arabs ceased and we had no Arabs of our own we should be without the most valuable breed of horses for military purposes in the world.

Secondly,—the *Thorough-bred English Saddle*. This horse is invaluable for breeding remounts from pure bred mares, but he cannot create a "type" of Anglo-Indian horse capable of reproducing itself, and therefore should not be used with any expectation of breeding so. All writers describe the Thorough-bred English horse required for India as one not more than 15.2 in height with 8 inch bone between the knee and 72 inch girth, tailless in hoof and limb and shaggy. I quite agree with those writers, but such horses are not bred in England, if found as they may be occasionally, they may almost be said to be the "Lusus Nature" of the Thorough-bred family, it is difficult to find perfect horses under 15.3 but those under 15.2 are for the most part weak somewhere. There are exceptions of course.

Thirdly,—the *Haciny*, or Norfolk Trotter as he used to be called.

This class of stallion was in great favour in India for many years, but is now "out of fashion" and I think has been unfairly condemned. I am not an advocate for him and have always preferred to buy a perfectly good, rational opinion between him and his Thorough-bred rival, but without any trial stud or perfect system of registering the result

of different crosses generation after generation no reliable opinion is possible ; but he is undoubtedly a horse of very sound and hardy constitution and America, France, and all countries come to England to buy him for their studs. In Sir E. Collen's memorandum of November, 1897, will be found extracts from the annual report of the Civil Veterinary Department, which are interesting and show that the hackney stallion had not been condemned as late as 1895-96 and one extract he gives from the report of the Superintendent, North-West Provinces and Oudh, of that year reads thus—

"The semindars of the North-West still retain their old love for the Norfolk Trotter, or hackney, the Arabs and Thorough-breds are not favourites, natives say that they are more difficult to put in condition and that their young stock are delicate."

However, General Tyler's commission condemns them utterly and states that "incalculable harm has been done by their introduction and also says that the type of horse of this class received from England has been inferior and coarse."

Now the hackney is a very different type of horse to the thoroughbred, but he is not coarse ; his ancestry is as old as the thoroughbred and none have been sent to India since 1892 that were not pure bred hackney horses and registered in the hackney stud book. Of 73 stallions sent out since 1892 21 have been by the most celebrated Champion sires such as Rufus, Cadet, Danegelt and Fireaway and many have been prize winners at shows ; it is a pity that the commission did not give us one more photograph of a hackney stallion although as they carry very heavy coats in the winter season they would have perhaps shown an idea of coarseness.

The hackney stallion may be trusted to get excellent remounts out of pure bred mares, but he cannot create an Anglo-Indian type of horse out of a line of mongrels, and should be used for first crosses only, to get remounts not brood stock.

Fourthly—the Stud-bred Stallion, as distinct from the country stallion, of pure Indian blood.

The stud-bred stallion is usually the product of an English sire and a dam of any breed and has sometimes two or more crosses of English blood in him ; in 1851 General Gilbert condemned the use of stud-bred sires, but in 1869 General Troup's commission placed him in value as second to "Trotters" and superior to Thorough-bred English. Since then he seems to have gradually died out, for in late returns of the department we find that very few have been in use ; this of course is natural as with the abolition of the studs no more have been produced. General Tyler's commission now recommends their re-introduction and proposes to raise a breed of the same from ten thoroughbred English and Arab stallions and 400 mares of sorts, and that stallions so bred and distributed throughout the breeding districts, will be successful in creating plenty of remounts, and saving Government the expense of importing stallions from England. This may or may not prove successful, but I should hesitate to try it myself. The commission is very strongly of opinion

that the Arabs and English thorough-bred stallion should be absolutely pure bred and have no other cross in them, why then do they put confidence in stud-bred stallions who are not of pure blood but are begotten by either English or Arab sires from dams whose parentage can hardly be known? Excellent horses I think may thus be turned out from the stud and perhaps be successful for a few years, but I believe that there will be no permanence in this blood and as "Moorcroft" writes: "if permanency cannot be attained interior horse-breeding will be illusory, lasting only a short time."

The commission refers to two stud-bred stallions bred by General Parrot, "Young-Egotist" and "Young-Grendon," and takes them as an example of what can be bred in India under good management; there is no doubt of this, but I do not think that either of these horses have any strain of Indian blood in them and General Parrot's stud was not in existence long enough to prove whether *permanence* had been established or not.

Lastly,—the Country Stallion. He includes the Kathiawar, Marwar, Belooch and many others; these have hitherto been neglected and despised, but on reading through the annual report of past years we find that native breeders are constantly reproached for their unaccountable predilection for their own stallions, yet from our returns we find that we have in our remount depots a very large number of young stock by *country sires* out of *country dams*, proving that the native breeder is not far wrong after all. I must say that the general appearance of the country stallion does not impress the Englishman favourably, for they are kept, as a rule, in a state of obesity, hardly ever exercised and fed with spices to make them neigh and are therefore called "screaming brutes;" but to the native breeders a stallion that does not neigh is taken to be very wanting.

I believe that if great efforts are made to resuscitate and develop the pure Indian breeds and to bring up the colts with ample liberty and exercise, we shall in the course of years possess in the country-bred sire a more valuable horse than the stud-bred, at all events that from his ancient lienage and adaptability to the country he will import more permanence and fertility to his stock than one of mixed blood will mix it how we may. Not only should a small stud be started in Kathiawar to raise this race of stallions, but one in every district where a distinct and ancient race is traceable, especially in Beloochistan.

A writer in the Live-stock Journal says; "Successful breeding to a particular type is the result of intelligent selection, modified by the action of laws of which we are at present, ignorant but there is no element of chance in it."

If in the last century we have failed to breed successfully to a particular type our failures, if studied carefully, may teach lessons which will enable the officers entrusted with the work in the new century even to master those laws of which the writer says we are now ignorant, at all events to introduce into their operations as small an "element of chance" as possible.

THE TRAINING AND EQUIPMENT OF CAVALRY AND MOUNTED INFANTRY IN INDIA, AND THEIR RESPECTIVE RÔLES IN WAR.

BY CAPTAIN E. M. J. MOLYNEUX, D.S.O., 12TH BENGAL CAVALRY.

Motto.—"Up to date in South Africa means twenty years ahead of Continental Europe."

The subject before us may be conveniently considered under the following three heads :—

- I.—A brief summary of what we wish our cavalry and mounted infantry to do in a great war.
- II.—How we should equip them for the performance of their duties.
- III.—How we should train them with a view to developing their utility to the utmost.

I.—THE GENERAL ROLE OF THE MOUNTED ARM.

I say "a great war" advisedly : the equipment and training likely to be most useful in a contest with a great European Power is not necessarily the best conceivable for use against ill-armed or undisciplined frontier tribes. We must, however, remember that no contest with frontier tribes is likely to prove a real danger to the empire, no matter how troublesome and costly in blood and treasure it may be ; and troops trained to the highest point of efficiency with a view to a possible contest with a European enemy should be quite capable of holding their own against less formidable foes.

If the South African war were taken as a complete illustration of what is to happen in the fighting of the future, there would be much reason in the view that our cavalry system is in want of the most revolutionary changes, and that the sooner we get rid of such encumbrances as swords and lances, the more likely we are to become efficient for war under modern conditions. That view is so extensively held and expressed amongst those whose opinions are entitled to every respect—even amongst those whose whole training has predisposed them in favour of the "arme blanche," that one is apt to be carried away into the belief that the shock tactics of cavalry can never again be expected to give results sufficient to justify the retention of any weapon but the rifle. I have heard my late brigadier in South Africa, Lord Dundonald, after a year of incessant fighting over every kind of ground, express that opinion as the result of his experiences, and

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there are many other cavalry officers of wide experience who have admitted that all their natural prejudices in favour of the traditional use of their arm have been dispelled by the magazine rifle. And amongst officers of other branches of the service, the same feeling is naturally stronger.

On the other hand, we find a certain number of authorities in favour of making no changes of importance in cavalry armaments or tactics, on the ground that South African conditions cannot be reproduced in Europe, and that no deductions of importance can be drawn from the late war, as the conditions were abnormal. The name of Lieutenant-Colonel Maude will occur to every one as an apologist for the cavalry on these lines. I confess that I have taken something of a prejudice against that word "abnormal," which, like charity, has been used to cover a multitude of sins. Were our guns unable to send their shells half the distance of the Creusot guns, no one is to say that there can be anything inferior about our guns, for the conditions were abnormal; were our infantry formations too dense, the conditions must be ridiculously abnormal, for they were handled according to modern "scientific" ideas. Were our cavalry over and over again utterly impotent against inferior numbers, nothing can be wrong with the cavalry training or handling, because it would be "abnormal" for other cavalries to refuse to meet our men in a contest in which our men's superior training would tell in our favour. I am inclined myself to believe that the most abnormal conditions consisted in the uncanny skill which the Boers showed in taking advantage of natural features. And even granting that the Boer method of fighting was abnormal, as judged by European ideas, we must remember that in a contest with a European power on the Afghan frontier, which so many statesmen regard as being the most likely of all contests between Indian troops and a European power, we should be fighting what is undoubtedly the greatest mounted infantry power in the world. And supposing that we went into such a contest with our cavalry very insufficiently trained in dismounted duties,—as I contend they are,—but at the same time trained to almost the highest attainable point in purely cavalry duties,—which we know to be the opinion of competent foreign critics in China,—in such an event, after the first few shocks had clearly shown the enemy in what tactics our superiority lay, surely it is not inconceivable or even very unlikely that he would issue instructions to his 59 regiments of regular cavalry, as well to his cossack troops (who are not and never could be capable of meeting our cavalry in any kind of shock action) that mounted action should be avoided, and that a cavalry attack, even in the open, should be met by magazine fire and a line of bayonets. And if we should then find out, too late, that we had neglected one very important side of cavalry training, would it be any excuse for our responsible statesmen and soldiers to explain that disaster had overtaken us only because the enemy had not "played the game," and his way of fighting was "abnormal?" We must not forget that the methods by which the cossacks wore down the superb regular cavalry of Napoleon ninety years ago, are practically the methods which would be employed against us to-morrow.

What, then, might we have to ask our cavalry to do in such a war? Should we abandon all idea of any but a purely mounted infantry training? I think not—not because I think that they would often get a chance of mounted action, for I hold that nine days of their fighting out of ten would be decided by the rifle alone,—but because I think that when the chance for mounted action arrives, it will be a very great one, and one of which full advantage cannot be taken by men armed with firearms only. For the whole experience of warfare in all ages and with all weapons should teach us that for attacking men who are already panic-stricken and “on the run,” a rush is always the most effective procedure, and that the most disciplined troops may be, and often have been, turned by such a well-timed charge into a helpless, terrified mob, not only valueless themselves at the moment for offensive purposes, but sweeping away formed bodies placed to support them. The Boer war is not devoid of such incidents, one example being the charge of the bushmen on a commando whom they had taken unawares in the open, and attacked at full gallop, killing or capturing almost the whole commando. For one such opportunity against the wily Boer we might expect to get certainly half a dozen against any European foe; nor would the full result in the case of either the Boer or the other be attained merely by dismounted fire; he must be “gone for.” Again, when attacked at night, or when for any reason they could not give the time to dismount, mounted infantry must necessarily be placed at a hopeless disadvantage with cavalry; and yet who is to say they will never be so caught? When with Dundonald's brigade in Natal I often had to go out with a company of mounted infantry to take up a line of day outposts, starting usually an hour before dawn. Pushing out in the dark miles ahead of the night outposts, armed only with rifles, and unable to distinguish anything clearly, even fifty yards ahead, it often occurred to me that had the enemy possessed cavalry at all we should have been unable to carry out such a duty without almost the certainty of disaster if attacked. Too dark to see to shoot, even if we could have dismounted before they rushed on us out of the darkness, hardly any could have got away; even given a start our slowest horses would have been overtaken by their fastest. And the enemy will take liberties with mounted infantry, who cannot rush them, which they would never dare take with men who could both shoot and charge. The numerous successful “charges” of Boers right on to our men in the later stages of the war—as in the disaster to Major Gough's force, and the attack on Colonel Benson's column at Brakenlaagte—would probably never have been attempted in the face of mounted men who could use the cold steel.

I should be sorry to see cavalry made into mounted infantry only. They would lose a very great deal of their offensive power. But we can still less go back to the drill-book idea that the dismounted action of cavalry is temporary, to be sparingly used, and comparatively unimportant. It must always, in future wars of magnitude, be a leading feature in their employment. The enormously extended area of the contest in modern war implies that nothing is of more

vital importance than the rapid transfer of fighting power to some threatened point,—to push home a success where the enemy is found unexpectedly weak, or to save some hard-pressed portion of our own forces from disaster,—for which purpose the cavalry may be quite possibly called upon to face the enemy's infantry. Such fighting power, in the case of any but an utterly demoralised enemy, must always mean fire action,—especially if he be acting on the defensive.

It may of course be urged that this is essentially the duty of the mounted infantry : unquestionably this view is correct, and given a reserve, partly cavalry and partly mounted infantry, held in hand with a view to some such eventuality, it would be correct to detach the mounted infantry for this purpose—if they were sufficient. In any war, however, in which two enterprising and well-matched opponents are engaged along a great extent of front, it may be regarded as certain that unexpected dislocations of even the most careful plans will occur. The mounted infantry may have gone off in one direction and an unexpected strain come in a quarter where only cavalry are immediately available ; or it may be, as often occurred in South Africa, that when all the mounted men within hail had reached the spot, there were found to be none too many, and every available rifle was required to stave off disaster. In such circumstances it would be a very serious matter were the cavalry to be found inferior, when, acting as infantry pure and simple, either in training or armament, to any infantry, mounted or other, to whom they might be opposed.

Nor is it only in the comparatively exceptional cases where masses of cavalry act as masses of infantry that they must be no whit behind infantry in dismounted efficiency. Picquets, patrols, contact squadrons must expect to fight, using rifle fire alone, almost daily over a front of anything up to fifty miles. Nor is it easily possible to exaggerate the importance of the results which may follow their proficiency, or the reverse, in purely infantry methods of fighting.

So we see that to get full value out of our cavalry soldier we must train him for the two classes of fighting which, according to the old cavalry superstition, can never be successfully combined ; he must be what Mr. Kipling calls a "giddy hermaphrodite" when speaking of a force which somehow manages to combine unquestioned efficiency on land with the successful performance of most of the duties of an able seaman. The disrepute attaching in bygone days to the man who "fought indifferently on horseback and on foot"—to quote Dr. Johnson's famous phrase—was probably to a great extent justified. Armed with his cumbersome and inaccurate weapon, with which he could not be very certain of hitting at even a couple of hundred yards, he was of small value for infantry purposes and a deficient training caused him to fall between two stools. The value of the modern mounted infantry soldier, with his light, accurate, quick-firing and far-reaching weapon, is unquestioned ; and the idea, that acting constantly dismounted must take the dash and go out of a mounted man, will find small favour with

those of us who have had the privilege of serving with mounted infantry of the best type, such as Thorneycrofts or the Imperial Light Horse: nor have most cavalry reason to think themselves superior in these essential qualities to Sheridan's or Forrest's troopers. I am myself inclined to advocate armament with the bayonet for cavalry, with a view to stimulating the aggressive sentiment even when acting dismounted. I return to this question later. In any case I can see no advantages in the half-hearted system of arming a mounted man with a second rate weapon, not allowing him to become really efficient with it, denying him almost all opportunity of manœuvring on foot,—though he may be frequently required to leave his horse a couple of miles behind in action—and then complacently sending him forth to modern war, where, nine days out of ten, he will do his fighting as an infantry soldier. Hitherto a system of make-believe has prevailed with us. We have always instilled into our cavalry that their attack upon infantry, if dashingy carried out, is irresistible; and conversely have always assured the infantry that, provided they keep their heads and shoot straight, cavalry cannot hurt them. Both statements cannot be true. The fact is, that neither is true. Both arms should have a just idea of their own limitations. It is instructive to recall to mind the deliberate opinion of the greatest master of what may be termed modern war—written in his exile at St. Helena—with all his matchless experience of successful war. The following marginal note was written by Napoleon to the contention by a military critic* that the best armament for cavalry would be a seven-foot lance, a four-foot sabre, and a pair of pistols:—

“A division of 6,000 troopers thus armed would be stopped by a house—a village—a ravine—held by a hundred light infantry. It is absurd—and cantonments—quarters—bivouacs—who is to look after them? Every horse-soldier should have a musket or a carbine.”

And the “musket” of that day was a ridiculous blunderbuss, which could hardly be palmed off now as a “trade-gun” on a cannibal. What opinion would Napoleon have had of a policy which grudges the modern “horse-soldier” the right to do his fighting with the wonderful modern magazine rifle?

What broad distinction should we then make between our cavalry and mounted infantry? I take it that the difference in their rôles may be said to result from the inherent differences between the materials we have to work upon. The cavalryman should be—and is, in India—well mounted, and as finished a horseman as we can produce by years of instruction and liberal encouragement to all forms of mounted sports in which skill in horsemanship is the paramount requisite; and he is also most carefully trained in the duties of reconnaissance in the widest sense:—I do not mean the mere covering of a party or convoy on the march, which of course we expect our mounted infantry to do when required. The mounted infantryman, on the other

* *Memoirs of General Lloyd, Paris, 1784.*

hand, is not intended to be mounted on an animal of the speed and power of our cavalry horses; we find it hard enough in India to get a sufficiency of the proper stamp for cavalry remounts. He should be mounted on a stout useful pony, without necessarily much pace or breeding about him, which can cover thirty or thirty-five miles in a day, mostly at a trot if required. Such an animal is not suited for reconnaissance where he might be pitted against the bigger and faster horse—of, say, a French or Russian dragoon. Nor would it be fair on the man to do so; his horsemanship cannot be carried to the same point as that of the cavalry soldier, unless we give him years of training in riding—which we are not prepared to do—and to train him also in the numerous detached duties of cavalry—which again is hardly feasible. Nor is it necessary, for we have really plenty of cavalry in India for purely cavalry work, if only they are properly supported by mounted infantry in work for which the latter should be equally valuable. Bodies of men on ponies which they can ride quite well enough to “get there” without giving their mounts sorebacks, to be used principally in masses in support of cavalry, but always intended to be sufficiently covered by cavalry to never run the risk of being attacked mounted—that is what we should aim at making our mounted infantry. Mounted infantry should be organized into corps, formed of volunteers of over three years’ service from infantry regiments, but the latter should never be called on to deplete their ranks on the outbreak of war in order to create mounted infantry.

It may be objected that mounted infantry in South Africa did as much as the cavalry, and more, and carried out almost every duty that can fall to cavalry, more perfectly than the cavalry themselves; and the contention is, up to a certain point, a perfectly just one. Let us, however, examine the matter a little, and we shall see how much this was due to any intrinsic superiority of mounted infantry compared with cavalry for such duties. In the first place, mounted infantry often got chances of distinction merely because cavalry were not available, and somebody had to do the work. Then, again, they had never to look to being opposed by cavalry; how that might have cramped their action is a point to which I have already alluded. And finally we have to consider the actual composition of the mounted infantry—an all-important factor, which has nothing to do with their training as cavalry. In the irregular corps raised at the beginning of the war, when men could be, and were, carefully picked—such corps as Thorneycroft’s or the Imperial Light Horse—the material was of a kind possessing advantages which no soldiers from home, however highly trained, could possibly possess. In my squadron, for example, most of the men were either colonial born, or men who had spent anything from five to twenty years in South Africa, and “knew their way about” in a way not easily acquired by a novice on the veldt. Nearly all spoke either Dutch (the Taal) or Kaffir; the latter invaluable at all times in reconnaissance, and especially when Kaffir scouts were largely used. Many spoke both languages. Not only did they

know the Dutchman's language, but a lifetime spent with him had taught them his ways and peculiarities, and they could always form a good idea of what he would do next; when they came to a house they knew what they would be likely to find there, and where they would find it: on reconnaissance, they knew where the Dutchman, if about, was sure to be lying up,—by what donga he would creep up to get round a patrol, and what were the certain signs of his recent presence in the vicinity. All could ride and most had kept horses. The general level of intelligence and education in the corps was higher than could possibly exist in any regular regiment: there was a considerable proportion of doctors, mining engineers, and other professional men in the ranks, and Rhodesia and other distant tracts had sent their quota of adventurous spirits—the “leaderless legion” who had learnt nothing of warfare from books, but whose knowledge of irregular warfare was long and wide, hunters and trappers accustomed to fight against cunning and merciless native tribes. I had also half a dozen American adventurers who had fought in Cuba, the Philippines, and South American revolutions—their training and methods instructive, though not ours.

Is it quite fair to blame the cavalry because they could not immediately produce results equal to such corps? The “man in the street” was very positive that mounted infantry must be a more useful arm than cavalry, because they played the more prominent rôle at one time. The thoughtful student of war will not jump to so hasty a conclusion. He will understand that to expect mounted infantry, possessing none of the superior advantages possessed by the South African irregulars, to show up to equal advantage, compared with cavalry, as was the case in Natal, would be utter folly. And we in India should not lose sight of the grave dangers which we run if we put mounted infantry to work at which, if opposed to good cavalry, they must inevitably fail.

II.—EQUIPMENT.

With regard to the clothing and equipment of the private soldier, the vexed question of headgear is simplified in India as the broad-brimmed colonial hat is utterly insufficient against an Indian sun. Of all patterns of helmet that known as the Egyptian pattern combines the greatest number of advantages—a broad, all-round shade for the eyes and neck, lightness, a smartness of appearance quite lacking in the hideous “mobilization helmet,” and the possibility of shooting in it. Both in Egypt and South Africa it has given a satisfaction unequalled by any other pattern. It is certainly expensive, as most articles are for which a limited demand exists; but if manufactured in large wholesale quantities there seems no reason to suppose that it need be much more costly than any other pattern. For native troops, a small khaki *loongi* is required: the British officers will find a light

semicircular leather peak or eye-shade, green-lined, to slip up into the folds of the *loongi*, a useful addition. For the coat and breeches a grubbier tint than what is usual would be better, with more of grey-green and less of yellow in it. The present tint of khaki shows up strongly against green. And, of course, the smart red *kummerbund* worn in cantonments by the sowar will not go on active service with him; it would be just as wise to paint a bull's-eye on him. The experience of the Highland Brigade, with their kilts, in South Africa, should be remembered. I am not advocating doing away with all that is smart and showy in the soldier's uniform in peace-time. I only propose that in his field equipment no consideration should enter but that of utility. Every man has a gala dress and a working dress, be he prince or peasant; there is no necessity to combine the two. For riding breeches Bedford cord is hard to beat for wear. They should be made to fit tight below the knee, by the use of leather laces,—of which a couple of spare pairs should always be carried,—run through large strong brass eyelet holes, instead of buttons, which come off. In the case of Englishmen, who run often to a large calf, a proper fit below the knee cannot be obtained, unless there is some means of tightening the garment there; and if the fit is bad, galls result. Any bazaar *dursi* can make a good close fit by the use of eyelet and laces. The cut should be loose in the thigh and seat, like hunting breeches. For Europeans, the experience of South Africa was certainly in favour of strong leather gaiters. There are many good patterns; the Horse Artillery have a useful one. The Stohwasser strap presses somewhat on the middle of the shin, and the position of the buckle makes it impossible for riding in the ranks. I should like to see the breeches of Native cavalry made as "Jodhpore breeches," so that they would still be wearable if the putties were worn out or lost. I do not know a much more serviceable foot-covering than the "Ammunition" boot.

As to cloaks; the macintoshes of the mounted infantry did not stand the hard rough work of campaigning, and went to ribbons. For Native cavalry "posteen" or "gutri" coat should be carried—in store, of course—except in very cold weather. Posteens are perhaps best, on account of the unsurpassed warmth of animal fur: the men may have to winter in China or Afghanistan. The regulation cloak is indispensable, for wet weather, and is quite sufficient against ordinary cold.

I look on belts as an anachronism, and should like to see them done away with altogether for mounted troops. The Boers, and most colonial corps, carried no belts, and were consequently able to work with a freedom denied to men trussed up with straps. An infantry soldier has his great-coat and many other things hung on to him which in the case of mounted men are carried on the horse, so it may be impossible to dispense with belts for him. In the case of the mounted man, the belt no longer carries the sword, which is on the saddle; it

is not necessary to confine his waist, as that could be done just as effectually by a belt of the same material as his coat or kurta, as the belt of a Norfolk jacket is fixed, which could be loosened if necessary on lying down to fire, and would be covered, in the case of the sowar, by the *kummerbund* in peace; and as for ammunition, no man who ever wore a good bandolier in action will want to go back to straps and pouches again. Then why wear the belt at all? It is, in the case of Native cavalry, the most formidable handicap to the sowar's shooting efficiency; in other words, seriously reduces his fighting value. For by far the greater part of his shooting must be done in a prone position, and the whole region of his waist is studded with pouches which effectually prevent him from settling that part of his person comfortably on the ground when shooting lying down. And even without the pouches he would find that lying down in one position for hours without shifting an inch—the ordinary experience of the fighting line in action—is utterly insupportable with a tight belt on. Another advantage in abolishing belts lies in the fact that on short halts he has only to slip off his bandolier, and he is totally divested of harness. It is difficult to exaggerate the relief this is in a long day of marching and fighting. As to the pattern of bandolier, that adopted by us in South Africa from the Boers has one serious defect: the cartridges project through the bottom of the partitions, from little holes punched in the leather, and in the course of months of campaigning the holes gradually get worn so big that the cartridges drop right through them. A consequence of this is that the South African veldt is littered with hundreds of thousands of cartridges lost in this fashion. This can be remedied by having a little funnel of leather for each individual cartridge—unless indeed we should adopt the clip system, the best of all, when each partition would hold a clip. A bandolier of this kind holds about one hundred cartridges.

I was present at the surrender of a great many Boers in the Transvaal, and was struck by the enormous amount of ammunition carried by each man, three to four hundred rounds in bandolier and havresack being a very usual amount. There is no matter of greater importance, nor of much greater difficulty in action, than the renewal of the ammunition supply in the firing line. Indeed, it may almost be said that under a hot fire at close quarters it is impossible. It struck me at the time that a man who going into action carries, say, 300 rounds about him, should have solved the question for one day. In Thorneycroft's corps we always had a light-running "Scotch cart" attached to each squadron, called the "Squadron ammunition cart," in which only ammunition and cooking-pots were carried, from 10,000 to 12,000 rounds reserve ammunition per squadron being thus carried without putting extra weight on the troop horses. These carts stayed with the led horses, going as near to the firing line as possible. Useful as this system proved, it did not solve the difficulty of individual supply. I think that a combination of this with the Boer system would form the best solution of the difficulty. I should like to see every man's reserve ammunition in a capacious havresack of strong

J—G.

tan waterproof mail canvas, strongly bound with leather and marked in large letters on the outside with his name or number, so that he might recognize it at once. On going into action, or dismounting where a serious amount of fighting might be apprehended, each man would take his havresack from the cart or pack-horse, and put it back when the action, if any, was over. The havresacks of the four different troops of the squadron should be in different bags to economise time in giving them out. With a little practice in peace the delay should not amount to more than a minute or two. With regard to cooking-pots,

we found that the greatest delay occurred in getting water, and boiling it; provided the cooking-pots were full and boiling when the supply wagons arrived, cooking was a question of a very short time.

In addition to his rifle and ammunition the only articles that the mounted man need have with him when dismounted for action are his bayonet, which might either be slung from his bandolier, or be carried in a frog in a pocket, as the Toxophilite Society carry their arrows; a very small "emergency ration," sewn up in a breast pocket; and his waterbottle, the latter an absolute necessity when going into action, possibly lasting all day, in a hot climate, as the earliest product of nervous excitement in action is dryness of the mouth. As for food, a biscuit in his pocket is quite enough.

I feel that I am in a sense on dangerous ground in advocating the bayonet as part of the equipment of a cavalry soldier. And yet I do advocate it, for I contend that his whole business when dismounted is to be a perfect infantry soldier for the time being, and we look on a bayonet as necessary for an infantry soldier. Its principal value to cavalry consists in giving greater independence to them—always a quality to be aimed at.

The following are quoted as a few of the cases where it is specially useful. The only alternative to giving him no weapon but his firearm consists at present in his having a sword dangling between his legs—an absurd armament on foot:—

- (i) When on sentry duty at night, especially if he might be suddenly rushed by a savage or fanatical enemy.
- (ii) In any night attack on foot, such as surrounding a farmhouse, village, or outpost of the enemy.
- (iii) In the case of cavalry caught dismounted by cavalry mounted: if they ran together into "rallying groups" like infantry, and fixed bayonets, if armed with magazine rifles, they could defy a mounted attack.
- (iv) In attacking positions or other purely infantry duty, which they may have to do at any time.

I know that it would be a big break with tradition but I can see no other objection. The Russian cavalry have been armed with the

bayonet for many years, carrying it in a little sheath fixed to the sword scabbard.

The rifle with which our men are armed is the weapon of first importance. Mounted troops on service, clearing scrub or rocky hills of hostile patrols and scouts, are very frequently called on to use their rifles precisely as they are used at a tiger or an ibex. For such a purpose the light pull-off of the sporting rifle is required, and I think that the pull-off of the military rifle might be more adapted to "snapshot" shooting. In any case their rifle must be effective up to at least 2,000 yards, to enable cavalry to hold their own.

We had several breech actions in use in Thorneycroft's. At long ranges, the Martini-Metford—Martini action, the calibre being altered to take the Lee-Metford bullet,—was usually good enough; but against an enemy advancing in European fashion by short rushes, a magazine would be essential: and at quite close quarters, 50 to 100 yards, the single-loader is utterly "out of it." It is at these close ranges that the rapid loading of the clip system is so superior. Time of loading matters little at 2,000 yards. The rifle should be carried slung on the man by a broad fairly tight band across the chest, fastening by a swivel hook. We had every imaginable method in use in South Africa, of which the shallow bucket in which to rest the butt, the barrel being grasped in the right hand, was found best for troops who do not contemplate shock action mounted. Slung across the back is the simplest and best way for cavalry, the weight being eased as required on the march by carrying it in the hand.

In the whole equipment of a body of cavalry there is hardly any detail of much greater importance than the field-glasses and telescopes with which they are supplied. The results of success or failure in the supremely important and difficult duty of reconnaissance have consequences which, in the light of South African war, need no demonstration from me. We know that any force insufficiently equipped with such instruments is placed at a most serious disadvantage as compared with one well supplied with them; and, nevertheless, it may safely be said that our cavalry is most inadequately provided with such articles, both as regards quantity and quality. At the outbreak of the South African war, Colonel Thorneycroft, knowing well that field-glasses of high power and quality were not supplied even to the regular troops of the army, whose wants must all be considered before those of his own "scallywag" corps—even the artillery, the naval guns alone excepted, not being provided with the very best glasses—ordered out, at his own expense, a large consignment of the very best field-glasses, telescopes, and compasses, that could be bought. The expense was of course considerable, the field-glasses (Zeiss) costing £8 each, and the telescopes (from Voigtlander of Vienna) somewhat more. Three or four were given out into each squadron, to selected men. I started with an excellent glass by an English manufacturer, but ended by discarding it in favour of a "Zeiss." The results

obtained by the use of such perfect instruments—which were constantly inspected and most carefully looked after—were most extraordinarily successful, and had a great deal to do with the very high reputation for scouting and reconnaissance work associated with Thorneycroft's mounted infantry. I do not know any glass which, for accuracy, range, and field, surpasses the "Zeiss." No. 8 is the size which long experience taught us to be the best general utility glass. It is always focussed and does not require to be screwed back to zero before being put into its case, which means, in the case of so many glasses, the tiresome process of screwing up to focus again each time of using. This makes a lot of difference in a long day's reconnoitring. The case is made in such a way that projecting shoulders catch the weight of the glass, the eye-pieces being thus kept from touching anything, and the weight not resting on anything connected with the delicate mechanism. With such glasses it was easily possible to tell if a Boer, with the sun on him, was wearing one bandolier, or a second across the first, at a distance of three miles. Field-glasses should be on the person, not on the saddle.

Light telescopes should also be carried, slung across the back in the proportion of one per squadron, because they obtain wonderful results at distances at which the very best field-glasses can tell very little. They require time and absolute stillness for their use, and so can never be used from the saddle, and are consequently unsuitable for officers, or for reconnaissance, except where some commanding position is the objective, where a fairly long halt can be made. But for mounted troops holding a fixed line of outposts, from some point in which a wide view is obtainable, they are invaluable. I will give an instance.

In July, 1900, a large convoy between Greylingstadt and Vlakfontein had to pass from east to west in front of a strong position about three to four miles north of the convoy's road, held by a powerful commando with several long range guns. Colonel Thorneycroft, commanding the covering troops, was himself with the mounted troops and the horse artillery to the north of the road, facing the Boer position; but from the conformation of the ground could not see the main Boer position, a high intervening hill interrupting his view, he being down on comparatively low ground. The Boers had given no sign of existence, except by firing at long range on any of our scouts approaching. I was in charge of the covering troops south of the road on fairly high ground: at one point in my line was the highest hill between Greylingstadt and Vlakfontein, which commanded an excellent view of the whole top of the Boer position. The convoy was passing below me at a distance of a mile or more, north of it was Colonel Thorneycroft, finally the Boer position. My squadron telescope was being used by a sergeant. Suddenly he said, "Sir, the Boers are bringing guns up into the nek." I looked through my glasses—the distance I now know to have been about 8,000 yards—but could not see anything I could be sure were guns. The telescope, however, showed three guns clearly; we could even tell how many horses

there were to each. I at once let Colonel Thorneycroft know where their guns were, and the earliest information was thus given of what proved to be a most vigorous and determined attack on the convoy. No knowledge whatever of the arrival of the enemy's guns could have been obtained by the covering troops on the north, for they were too low down; and from my commanding position no instrument but a telescope could have found the guns. One such occasion alone would justify the existence of that telescope, even had it not been doing the same work already for months.

The English army is "spoiled for a ha'porth of tar" more often than any other, and some petty economy has prevented our mounted troops being provided with the very best field-glasses, and assuredly none but the very best should be given.

To equip the whole of the regular cavalry in India, British and Native, with the very best field-glasses, Zeiss No. 8 for choice, at the rate of two per squadron, and two of the best light Voigtlander telescopes, in sling cases, per regiment, would cost Government about £6,000, and the expenditure would be amply justified. The field-glasses of old patterns might be given to native officers or men, as they are better than nothing. Cavalry officers should have no glasses but the very best; their quality is of far more importance than that of their swords or pistols. The field-glass is the weapon with which the cavalry officer does most of his fighting.

Compasses should be large, in gun-metal cases. Little compasses carried on wrist-watches are useless toys.

Compasses.

Light Forbes' range-finders, with stereoscopic vision, registering to 3,000 yards, weighing about 6lbs. only,

Range-finders.

including Zeiss glasses, should be carried one per squadron. They are the only reliable range-finders which can be used without exposing the user.

Machine-guns are weapons peculiarly suited for use in conjunction

Machine-guns.

with the mounted arm. Every cavalry regiment should have them, and they should be quite independent of the artillery. Their use by the Boers was most noticeable; the fact, so much commented on at the time, that even long after the capture of Pretoria no single gun had been captured by us except one or two that were abandoned by them as damaged beyond repair, is due largely to the way in which their retreat was covered by machine-guns, especially the "pom-pom," which, brought into action at any range up to 6,000 yards, was usually the last to leave, and could do so at a pace which gave our mounted men no hope of capturing it. So remarkable were the results obtained by the Boers that, finally, a large number of "pom-poms" were sent out to South Africa for the use of our troops. Our machine-guns are now used boldly and intelligently; but at starting we were much hampered by conservative traditions on the subject of centralising command where anything in the nature of a gun was concerned, and splendid chances were lost in consequence. The afternoon that the Biggarsberg was turned by the force under General Buller, and a lodgement

effected on the flat top of the berg, the Boers, attacked in flank by the two most advanced squadrons of Dundonald's brigade (one squadron South African Light Horse and my squadron of Thorneycroft's) retired quietly along a narrow spit of the high ground, out of effective rifle range. We watched them move off at a distance of at first not more than 3,000 yards, well within the range of "pom-poms," which the Boers knew quite well were not allowed to be with our advanced squadrons,—and finally disappeared behind some low kopjes about 5,000 yards away. Presently the whole of Dundonald's brigade arrived, including "A" battery, which unlimbered, and attempted to shell the Boer position. The Boer "pom-pom" opened on them with their range to an inch. It was impossible to locate the "pom-pom," as apparently it must have been fired through a blanket or screen, no flash being visible anywhere; and at that time our gunners could not have reached it even if they had found it, for they had no effective shrapnel fuses beyond 4,500 yards. A cry arose for our "pom-poms"—newly arrived—to reply. But they were with the naval "cow guns" five miles in rear. So the gunners were ordered into a Boer trench hard by, and we all sat down to await arrival of the naval guns—a somewhat "lame and impotent conclusion." Later, in the same afternoon, I was sent out with my squadron, along a plateau flanking the Boer position, to obtain what information I might; we moved widely extended and took advantage of every bit of cover, but were eventually driven in by the amazing accuracy of their "pom-pom" fire at long ranges, not a rifle having been fired on either side. So, too, the "pom-pom" with their mounted rearguard enabled the Boers to retire from successive kopjes on Pieter's Hill with practically no loss from their pursuers; as we occupied each hill they had abandoned, the accurate fire from the "pom-pom" baffled every effort to make immediate use of the new position. I was with the naval guns on Monte Christo, supporting the attack, and in spite of every effort the naval gunners could not find the "pom-pom," but had to search every likely bush and donga "on spec."

The maxim guns were also most useful. When covering the front in an advance, Colonel Thorneycroft would usually ask if I cared to have a maxim or two. I found them invaluable in masking a hill which might possibly be held. A few shots at the top of the hill, using the gun as a single-loader, determined the range, the gun itself, hidden if possible, being with the nearest formed body in support behind the scouting line. If fire were opened on the scouts—who approached, if possible, from the flanks—at the very shot, the gunner, sitting astride of the gun, with his finger on the trigger, poured in a torrent of unexpected fire, under cover of which the scouts got back in every case untouched. The Colt guns were preferred, on the whole, to the maxims, as they come into action more rapidly. For power of bringing assistance to other squadrons on either side, who may be in want of it, without unduly weakening one's own portion of the general alignment, machine-guns on galloping carriages are extremely useful and, if smartly handled, get chances which would have passed long before the arrival of the horse artillery of the brigade,—and only one

man need be dismounted. It may be mentioned that if horse artillery are to make the most of their quick chances, it will often be advisable that a senior officer of the battery should be with the advanced squadron, almost in the scouting line, with his range-takers; he will be able to select his position, have his ranges taken, and have got a good idea of the grouping of the enemy by the time the guns arrive, when they should be able to come into action without a moment's delay. I often noticed the captain or major of "A" battery only just behind my advanced scouts.

Much attention is given in India to visual signalling, whilst the possibilities of the field telephone are neglected. Yet occasions do occur on service when mounted men would find the telephone of the greatest advantage. It is much more easily learnt, and far more rapid and satisfactory than the quickest signalling, as it admits of instantaneous question and answer. To give an instance. In February, 1900, I was commanding the advanced line of mounted men close to Colenso, then held by the Boers, the left of my line resting on "New Gun Hill," the latter connected by telephone with "Old Gun Hill," two or three miles in rear, where the naval guns were posted. My extreme left vedettes could see to a certain extent "round the corner" behind the Fort Wyllie kopjes across the river. From that point one morning I noticed a number of Boers busy at something behind one of the kopjes. I "called up" the naval guns, and through the telephone explained exactly where the enemy were collected. A shell promptly sent on my description over the kopje fell very nearly into the middle of them, and effectually scared them from their work. Cavalry holding advanced position could give information by telephone more rapidly than by any other means. The little bit of loose string on the ground is no check to any arm, and is all that would be lost were the cavalry suddenly driven in.

The suggestion for signalling by advanced cavalry which I am now about to put forward is borrowed from the very efficient smoke signals employed by the Kaffirs. I hope our "scientific soldiers" will not be too hard on it on account of its lowly origin. In these days of cheap chemistry it should not cost much to try how it works on manœuvres. Winston Churchill has thrown out a suggestion which has been favourably received by gunners, that for artillery a signal shell might be used, which, on bursting, should throw out dense volumes of purple smoke, upon which every gunner within range should pour in the most rapid fire possible. Those of us who went through the South African campaign must all remember the numerous exasperating occasions when the fleeting chances given by our mobile enemy were utterly lost before every one could be made to understand by signalling what was really the exact spot intended for the fusillade. If the C. R. A. could, so to speak, put his finger on the place at once with a coloured shell, there would neither be time lost nor possibility of error in locating the spot; and every gun, pom-pom, and maxim, within range, might pour in such a hurricane of fire as to annihilate anything

which might be there. The value of this device with guns acting with mounted troops seems obvious. I propose to use it in a somewhat different way as well. The difficulty of differentiating between one's own men and the enemy at modern long artillery ranges, is very great indeed. I was with the naval guns on Monte Christo during the attack on Pieter's Hill, and I can answer for the terrible doubt and anxiety which prevailed at times as to whether certain hills had been occupied by us or were still held by the enemy, and to be shelled accordingly. Yet our sailors had splendid telescopes. Similarly, in the attack on Botha's Pass, the advanced scouts of my squadron, which was covering the right advance, were heavily shelled by our big guns from Ingogo, being taken, presumably, for the retiring Boer skirmishers whom we were driving before us up the lower slopes of Inqueloan; and it was some little time before my squadron helio could stop it.

The need, then, of indicating by some means, immediately on arrival there, to all and sundry, that a certain position is held by our own men, is a very pressing one. Could not the signallers with the advanced squadron carry some kind of pre-arranged signal in the shape of little tins of slow-burning composition, to give off dense fumes for a few moments? A squib of the kind would cost little and weigh little. It may be objected that the enemy would get to hear of it and use similar ones, as the Boers bothered us by using our helios and other signals; this might be got over by changing the signal daily, just as a countersign is changed and put in orders. Theoretically, of course, the information of the occupation of a certain position should reach every one through the staff to whom it is sent: practically, it gets to the staff and stays there.

We come now to the consideration of the horse, and what he should carry. The question of remounts for cavalry in India is thought out to the utmost, and economic difficulties alone prevent the supply being more ample than it is. The only remark which I feel is called for in this connection, regards the colour of the horses. I maintain that the prejudice prevailing against grey horses is quite unfounded; a very large number of excellent horses is yearly rejected by Indian cavalry regiments, simply on account of their colour, causing a waste, in a none-too-plentiful supply. It is known that whereas bays and browns predominate to the extent of 90 to 95 per cent. in north European climates, in sub-tropical sunny parts of Asia and Africa, the total number of greys reaches a fourth or fifth of the whole. I own to a strong predilection for greys for stamina and endurance. All through the many months of fighting which I had in South Africa, I rode one horse only, a grey—except for the first week; and I neither wish nor hope to possess a better animal for the hard, rough work of a campaign. As to visibility, a little Condry's fluid will turn a grey squadron khaki, and do their coats no harm,—though this we never found necessary to do in South Africa. It is quite true that a white horse at certain distances, with the sun on him, will show up more strongly against any

ordinary background than a dark one: at long distances, three or four miles, (which is the distance, in any but a country like the plains of India, at which advancing cavalry scouts would first be seen,) we found grey horses rather less noticeable than dark ones. Of course in snowy, foggy, or misty weather, and at night, the light-coloured horse has a distinct advantage. Cond's fluid or, better still, some concentrated substance of the same nature which might be carried as a powder, might be with the field forge (we found it advisable to have a forge with every squadron in Thorneycroft's, on account of detached duties, etc.) On service the grey horses might be sluiced over with it every time they were shod; it would give no trouble. Why reject hundreds of splendid horses every year, simply because they are grey, when the colour can be so very easily changed at will?

With regard to saddles. There are so many patterns in use

Saddles.

in native cavalry regiments, for which their enthusiastic inventors claim all kinds of advantages, that I find I have not courage enough to say what I think about some of them. I should get myself too much disliked. But for mounted infantry I have no hesitation in saying that nothing but stuffing pannels should be used; the way horses will lose and gain condition on service makes it impossible to keep horses' backs in condition without incessant re-adjustment of the weight to the weight-bearing surface. Very great elaboration of method cannot be looked for in mounted infantry, and the simple method of altering the lie and amount of stuffing to suit the alteration of shape of the back from change of condition can be taught to all, though not to be attempted by any one without careful training. It may be argued that a pound or two in weight may be saved by the adoption of some other pattern; granted that this is so, we must admit that a horse safe from immediate danger of a soreback is better than one, carrying a slightly lighter weight which is in imminent danger of becoming ineffective if care and supervision be not exercised, which often become impossible on service. "A live dog is better than a dead lion." On service detachments remain for weeks, even months, without coming in sight of their squadron commander. A blanket or felt numdah should always be under the saddle. The useless breastplate should follow the now discarded crupper, for active service, a few being carried for each squadron to put on any "herring-gutted" animal that loses condition behind the saddle to the extent of making the saddle slip right back. Very few horses will be found to really require breastplates if their saddles fit well and the weight is properly adjusted.

The split "cape" girth, kept soft and pliant by soap and dubbing, is the best for wear and standing sun and wet; web girths are more likely to gall, and rot much more rapidly on service when left lying out night after night in the heavy dews of a bivouac. I should also like to see a thin light leather "rimpi"—a strip of undressed hide about 6 feet long, kept soft by soap—carried under-

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neath the headstall, to replace the headrope used in linking horses; "ringing" them in South African fashion is often more useful than linking, especially at night, when horses may become restless and a whole string of them pull up their pegs and wander off. A "ring" cannot possibly wander more than a few yards, and is formed by simply making a line of tethered horses into a circle, heads inwards. It has the very great advantage of dispensing with picketing pegs, which, in very sandy, rocky or wet soil, are often impossible to fasten with any security. On service, too, a terrible dearth of picketing pegs is often felt, from pegs getting lost and broken.

As to bits. There is nothing wrong with the cavalry bit for thoroughly broken horses. For mounted infantry ponies the squadron commander should have a certain discretion allowed him in the use of bits, and it would be a real economy to let him have a dozen spare bits of different pasterns, to use for any ponies which do not go well in the regulation bit. An unmanageable animal is a nuisance and a danger on service; and every man who has kept polo ponies knows that a pony which one can do nothing with in one sort of bit will go quite kindly in another. We used every sort of bit in irregular corps, and were all the better for it. A few standing martingales might also be with each squadron. When the choice lies between uniformity and efficiency, I think the former might yield a point.

Saddle-bags are found much better for a slow moving corps than wallets, though the former, throwing the weight on the loins, check galloping. When going out on a reconnaissance, where we might be chased, we left our saddle-bags at home. Saddle-bags should be carried by mounted infantry, wallets by cavalry.

Haynets, to carry a good load of hay or other fodder in front of the saddle, are extremely useful and every man should carry one. If of thin string, with very wide meshes they weigh nothing, and a man has often got to carry the night's fodder several miles. I have noticed that cossacks invariably carry them.

It would be beyond the scope of this article to go into the details of what should be carried on the saddle. The main point is that no single superfluous thing should be carried on the horse. The silly overloading of horses in South Africa, out of blind obedience to regulation, was the cause of thousands of horses becoming ineffective, and of the escape of the lightly-equipped enemy at just the moment when another spurt on the part of the mounted troops would have caught him. For example, one saw a cavalry or artillery soldier, with a new pair of ammunition boots on his feet, travelling all over South Africa with a spare pair strapped on to his near wallet, or wherever "the regulation" prescribes that they should be carried. A good new pair of boots will last an infantry soldier some months, and a mounted man much longer.

Would not the supply wagon have been a much better place for the spare boots? In the case of lancer regiments, the abolition of the sword would lighten the weight by several pounds. It would be interesting to know how many cases have occurred in the last fifty years of a lancer using his sword. At present he is an overarmed man. A cloth or leather point protector should be used on reconnaissance, unless a jointed lance be introduced.

Whilst on the subject of equipment, a word on the officers' kit may be of use. On active service most

Officers' kit.

officers carry far too much, and this not only hampers their movements, uses up transport, and results in having eventually to jettison a great part of it—for mounted troops have to clear out of a bivouac under shell fire in time which does not allow of much packing—but it seriously distracts their attention at critical times. Personally I found that a single bed-valise, made of stout tan waterproof mail canvas and with thin waterproof flaps to cover across in bed, was quite sufficient to carry everything, and had no other package nearer than Maritzburg, during a ten months' campaign. The few spare socks and shirts, spare coat, pyjamas, leather writing case, little eight-inch leather toilet case to hold brush, comb, razors, etc., went into the pillow, the blankets remaining in the "roll-up"; the bed was made instantly by simply unrolling the valise. On a sudden order to saddle up and march, how often have I not seen officers, the unfortunate possessors of a comfortable "campaigning kit," leaving their men to their own devices, rush off to commence a feverish wrestle with dressing cases and portmanteaux, and probably end by leaving behind some indispensable article in the kit which had to be left in some improvised dépôt. There is no need that officers should confine themselves to one package when in standing camp; but their kit should be so distributed that they can give an order in an instant "The bed valise has everything indispensable in it: put that on the mule, the other things go into store." Camp furniture will seldom be found portable enough for mounted troops covering the front in a big war. A light aluminium plate, spoon, fork, and cup, to go into his saddle-bag or wallets, are essential; his jack-knife—which should contain corkscrew and tin-opener—will also serve as a table knife when required, and should have a lanyard.

The number of followers with native cavalry is a frequent subject

Followers.

of criticism. I am not in favour of substantially reducing their numbers, because to do so only means in the long run having to take men from the fighting line to perform their duties—a most fatal economy. Their baggage and food is on the lowest scale consistent with keeping body and soul together; they are inexpensive, little trouble, and their use for multifarious duties sets practically the whole body of trained fighting men free to fight. They correspond to the extensive use of "Kaffir boys" with the Boer forces. No body of mounted troops in the world can turn out nearly the same proportion of men on parade to strength on the rolls as Native cavalry, because all are available

to fight. In South Africa we found that, in practice, over 30 per cent. of our strength was never with the fighting line being occupied with the duties performed in Native cavalry by the followers. They form an indispensable part of the equipment.

IV.—DRILL AND TRAINING..

I have decided to put the question of the care of the horse, and at least an elementary knowledge of his commonest requirements and ailments, in the very forefront of all suggestions on the training of mounted troops. Ignorance of the horse, and the resulting shocking loss and suffering of horses in South Africa, was one of the most disgraceful and inexcusable failings of the campaign. The management of horses touches the very bed-rock of efficiency of mounted troops. Labour spent upon drill, or the use of any weapon may be worthless ten years hence. The horse to-day is structurally the same animal that drew Pharaoh's chariots, and no time or trouble spent in this direction can become out of date. In the case of the hastily raised yeomanry and irregulars such ignorance is excusable; but the regular cavalry also were far from being above reproach in this respect. I do not so much refer to the official regimental methods of looking after horses as to the helplessness of the rank and file when deprived of the direction to which they had been accustomed in time of peace. Over centralisation, in the matter of what should be common knowledge, is responsible for this. In cavalry regiments in peace the whole veterinary work lies in the hands of trained experts: a horse is lame—he disappears into the horse hospital and returns cured; everything works smoothly, and there seems no need for any one but the veterinary surgeon or farrier-major to concern themselves about the matter. I remember being present when a cavalry sergeant of eight or ten years' service was undergoing a severe wiggling from his commanding officer on account of some horses in his charge on detachment having become ineffective owing to want of knowledge of the most elementary kind. The officers wore a "shocked and pained" expression: everyone was horrified. "A sergeant of your length of service not to know that!—monstrous!" Yet the poor devil who was being bully-ragged and reviled for not knowing what he had never been allowed to learn, was an intelligent and well educated man, keen to do well. He could probably have reeled off the drill of the formation of a ceremonial escort word for word as in the book, and could have been taught all the veterinary knowledge that he would ever require in practice with the greatest ease. But a faulty system forbade it in his case as in that of thousands of others. And his country is now paying for that in millions sterling for remounts that should never have been required. Over 200,000 remounts have up to date been landed, and mostly "used up," in South Africa, besides enormous local purchases. Four years' service in a British cavalry regiment convinced me that it is quite

possible for a trooper, and even for an officer, to go through his whole service and know practically nothing of a horse at the end of it.

The above shortcomings have been so painfully brought home by the war, that there is no need to dwell on the subject. The thing is to suggest a remedy. Very much might be done in India in stations where a veterinary hospital exists, by permission being granted to officers commanding mounted corps to let an officer take a squad of non-commissioned officers in and out at any time, after the veterinary surgeon had finished, for instruction. They need not in any way interfere with the veterinary establishment. Greater facilities should be in the first place insisted on for junior officers. The mistake is so often made of assuming that a young officer on joining knows all about horses, or, if not, that he will "pick it up." He may or may not. That he is a good horseman proves nothing; his horses have in all probability been looked after for him. If a system were adopted of requiring the regular attendance of junior officers at the horse hospital for practical instruction from the veterinary officer, they would learn more there than in any "course" of veterinary lectures where they learn by heart the Latin names of the bones of the hock—very useful, no doubt, for a veterinary surgeon, but not the most direct way of acquiring useful practical knowledge for the non-professional. It might then be a fair thing to expect every subaltern of over three years' service to take the non-commissioned officers of his squadron for practical instruction, say once a week, after stables, to the Horse Hospital, and by questions and ocular demonstration go into the simpler and more ordinary cases met with, discussing the causes, symptoms, and treatment of every-day injuries and ailments. If the subalterns took this duty in rotation, either regimentally or under squadron arrangements, it need not take up very much of their time, and would be of very great advantage to their own knowledge as well. No note books should be allowed, except to the lecturer, to arrange his lecture; they should be required to carry it away in their heads, and to remember the horses of their own squadron without reference to books or numbers. Cases of saddle gall, girth gall, etc., should be gone into with the actual saddle or girth that caused the injury, and the cause and means of prevention explained. I think most non-commissioned officers would take a positive pleasure in a practical course like that. A few questions at his annual inspection by the Inspector-General of Cavalry—not to officers only—would have a very stimulating effect. Instruction like this is equally necessary for mounted infantry.

In doing long marches with overloaded and overworked horses it saves the horses greatly to let the men walk, say, 6 or 8 miles out of 20; this should be made a habit of in peace, and will do the men a lot of good in cool weather. In the frequent halts which occur in long marches, whether on service or manœuvres, men should be encouraged to slip the bits out of their horses' mouths, slack the girths, and graze them about, wherever grass is to be found, provided they do not scatter too much, and the force is quite secure from any chance of immediate attack. They should be trained to do this at once

instinctively, without waiting for any general order. Of course, it does not look "smart," but we did not make a fetish of "smartness" in scallywag cavalry. When men come into camp at dark, and there is no opportunity for proper grooming, every man should know that his first and most important duty is to bring thorough circulation into the parts of the horse's back which have been under the saddle, by five or ten minutes of vigorous rubbing. The weight tightly bound on to his back for many hours has driven all the blood from the vicinity of the skin under the saddle, and the back is ripe for mischief. The rest of his body, be it never so dirty, can safely be left for daylight or other opportunity. I have seen tired-out men set to "do stables" in a feeble way on coming in, when the back got a totally insufficient share of the attention distributed over the whole animal. If the men had been set simply to bring back the blood into the back, knowing why they did so, they would have done it with a will, and all would have been over in a few minutes.

The ability to reconnoitre dismounted is as necessary as the power of fighting dismounted. A point very strongly brought home in South Africa was the necessity for such training. A horse is a great clumsy encumbrance when reconnoitring, offering a magnificent target. We found in practice that about 1,200 yards was the point at which the thinnest line of mounted scouts was brought to a standstill in front of a hostile position. To approach any nearer mounted is only to lose men without getting any compensation in the way of information of the strength of an enemy "lying low;" and to remain halted at 1,200 yards, and attempt from that distance to find out anything of value, is futile. In mountainous country the necessity of parting with the horse on reconnoissance is still more pronounced, as he cannot move as fast on a steep hillside even as his rider. In Northern Natal I have found it occasionally necessary to leave the horses as much as a mile in rear when reconnoitring.

The scouts must be taught to creep up to a position on foot without being seen, and to co-operate with one another whilst engaged on this supremely difficult and dangerous duty, by bringing a cross fire to bear upon anyone attempting to follow up a comrade, even at the risk of themselves becoming an object for the enemy's attentions; though with smokeless powder the risk is not nearly so great as the scout will himself imagine. The first time he hardens his heart sufficient to fire on those attempting to follow up a friend, he will expect a hail of bullets all round him; but if he keeps hidden, his whereabouts will puzzle the enemy, and that instinctive dread which we all have of the unknown, will make pursuit very slow and cautious. With the lithe and supple men in Native cavalry, by choosing men specially for their intelligence and natural aptitude, scouts can be trained to a high level at dismounted work; but they require the utmost patience and encouragement. Some regiments, however, seem rather inclined to under-rate the value—or rather the indispensability—of such training, and to consider that what little dismounted scouting has to be done

will come to the men naturally. It is comparatively easy to teach a few intelligent men to crawl about so as to approach any place with the minimum risk of exposure, just as a hunter stalks an animal; the most difficult and essential part of the training is the affording of mutual support and information whilst remaining hidden themselves. The very best regiments at mounted scouting will find themselves disappointed at the practical results they can achieve on service, unless they pay careful attention to this point.

The actual formation to be employed on reconnaissance is a matter in which the very largest latitude should be allowed the squadron commander, consistent with the maintenance of due cohesion. All should be ready at any time to close into groups of four, of whom three can bring dismounted fire to bear. Only practice under intelligent direction can teach men when to do this spontaneously. I am inclined to think that our usual formations are too thick and pay too much attention to keeping their direction with the regulation intervals. On approaching anything that might conceal an enemy, such as a farm or orchard, the party of four or more moving straight on it should not attempt to go near it until those on their right and left have passed round its flanks, which they will usually find safest to do at a trot; they should dismount under cover from which they can bring fire to bear on the place, whilst the flanking parties do the same, so that a cross fire may be brought to bear on it instantly, whilst two or three men trot right round behind it, keeping half a mile or so away. Unless strong support is very close indeed at hand, no small body of men will allow itself to be thus surrounded,—even though those surrounding them be at first only a few scouts—without firing; the scouts are almost certain to draw fire; if not, then the place should be cautiously approached, on foot, and, when found unoccupied, the halted party can trot up into the general alignment, which, without halting—unless firing be heard—will have “slowed down” for them to come up. And if the delay be sufficient to necessitate a halt, the men of each group must be trained to take their own precautions during the halt, by having one or two dismounted men, carefully hidden, on the look-out from the nearest point of vantage, whilst the remainder halt under any available cover. For the chance of killing one wretched scout, it may be taken as certain that the enemy will not expose themselves to being surrounded and having to ride into a fire from all sides when retiring.

Officers' patrols should consist of the smallest possible number of men; as a rule, six or eight is the smallest number practicable, as it will constantly be found necessary to detach a couple of men to watch from an eminence whilst the rest of the party make for some other point, and a second couple may have to be detached before the first have rejoined. When a patrol is likely to be chased, it adds a great deal to their security if a second party occupies some position on their line of retreat. If pushed out before dawn or otherwise unseen, the second

party is in very little danger, as their strength and exact position being unknown, they will be very cautiously approached by the pursuers, should they fire on the latter; for with smokeless powder the magazine fire of half a dozen men is indistinguishable from that of half a hundred. A couple of days after General Buller's arrival at Standerton, I recollect being chased by a party of Boers who attempted to cut us off. We were reconnoitring towards Ermelo. We galloped and the Boers coming under long range fire from quite a small party dropped on a kopje behind, abandoned the pursuit. For anything they knew they might have been running into a strong outpost or reconnoitring line; and if they stopped to make sure, there was no hope of capturing our galloping party.

Since the appearance of General Baden-Powell's book on
Tracking. scouting, the question of tracking seems to have attracted an amount of attention quite out of proportion to its practical utility. I have even heard some enthusiasts advocate the formation of "classes" to give instruction in tracking. Amongst our Kaffir scouts we had some admirable trackers, yet I cannot recollect any occasion where their knowledge led to very appreciable results. In wars of any magnitude, following the spoor of any individuals will rarely be attempted. The tracks of a large body of men do not require a trained eye to detect them; in the case of an officer's patrol or other small party, the enemy will be moving with "the beard in the shoulder," and any attempt to catch them by following along their own course is more likely to end in the pursuers getting hurt than the pursued. The only way to catch a patrol is to cut it off, or make for some position in their probable line of retreat, and there is small scope for the tracker's skill in that. The only occasion which I can think of where trackers would be really useful is the occasion of hostile patrols being known to have passed through our lines at night, with the idea of lying hidden in observation all day, and continuing their journey next night. Trackers might be useful to "run them to earth" when their hiding place was unknown. I notice that Lord Kitchener has lately asked for Australian trackers; but what is now going on in South Africa is not war. Trackers of the highest skill are found amongst the cattle-owning tribes of the Punjab, and where any such exist in regiments, their names should be noted in order that their services may be utilized if ever required. It could hardly be hoped that any short course would turn men into Burnhams, for even such men as he take a lifetime to learn the art.

Two main points strike me as requiring reform in the fire-training
Musketry and fire-training. of cavalry. For them, at all events, volley firing should be abolished. I do not think that for any troops much opportunity will occur for it in modern war; for any number of men to be close enough together to work to one word of command would offer far too favourable a target under ordinary circumstances, unless acting under artificially prepared cover under which circumstances it is probable that individual fire would be equally effective. The Turks at Plevna found it so. And even

supposing that any officer could get his men close enough together without exposing himself to loss, to fire volleys when fighting against an equally well armed enemy, the noise of firing all round would make it physically difficult for even the lungs of a stentor to control the fire. Besides which, allowance must be made for the weakness of poor human nature in imminent danger of death, and even on the range one "jumpy" man will spoil the best volley. It is true that in the Napoleonic war we employed volley-firing with effect, especially to beat off cavalry. We must, however, remember the iron discipline of those days, stronger even than the fear of death itself. Such a discipline cannot be revived amongst us again. And with it goes all hope of that tremendous control necessary for volley-firing in action. That Napoleon thought little of volleys, even in those days, we have the clearest proof. To quote again from his marginal notes on General Lloyd's "Memoirs," he says, "The only practicable fire before the enemy is independent fire." And again: "The fire of skirmishers is the best of all." We have just "discovered" that fact in South Africa. That volleys mowed down poor spear-armed fanatics at Omdurman proves nothing. For cavalry, for whom it is admittedly difficult to find time for effective musketry training, the case for abolishing a form of fighting hardly ever used, except against savages, seems overwhelming. I would most strongly urge that the time and ammunition now spent on volley-firing for cavalry be expended in some such practices as those instituted by Lord Dundonald for the training of the irregulars during the lulls we had when together in standing camp in Natal. A dozen khaki-painted "head-and-shoulders" targets would be conveyed out secretly to some convenient hillside, and disposed there. A flag indicated the firing point, which might be anything from 500 to 1,500 yards from the targets: another flag, half a mile from it, but not necessarily disposed so as to be in a line with the targets and firing point, formed the starting point. The squadron sprang forward at a gallop scattering to open order as they did so. The ground was not chosen for being level and easy, the men being required to use their own judgment in picking their way amongst rocks or other obstacles, whilst preserving a rough alignment. On nearing the firing point they close in at a signal from the squadron leader, who, in galloping up, was supposed to have marked down the best available cover and best place to dismount. On dismounting, if unable to dismount behind adequate cover, the horses were galloped off to cover instantly, not necessarily all to one spot, though kept as much together as possible. Meanwhile the squadron commander, after rapidly pointing to the objective, ordered all to take cover so as to be able to fire on the targets, and to open and cease fire on his long whistle. After a little practice, the men "got to earth" cleverly almost as soon as they were off their horses. The officer rapidly estimated the distance, and, if a dry day, a couple of shots, by his best marksman, carefully watched through Zeiss glasses, confirmed or altered his estimate. Then the whistle went. The five rounds allowed each man were fired, the judges

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carefully noting whether each man, officers included, made the most of any cover near. Then the whistle went again; the men sprang to their horses, and without any attempt at resuming formation, fell into a rough galloping alignment in extended order behind the squadron leader, who headed back to the starting flag. On arrival there, being supposed to be now out of range, they fell into their proper places. Points were given for hits and time, and deducted for want of pace, want of quickness and cleverness, in utilising cover, and "bunching" into groups. Hits were counted by the umpire. This practice is essentially an active service one. It should be possible to carry it out in the vicinity of most stations in India, and should certainly not be a mere "annual course." If 20 rounds per man only be allowed, at least four profitable trainings can be carried out, and it might usefully be practised, *minus* the actual shooting, on the line of march or other occasions on unknown ground.

My second suggestion refers to the question of manœuvring dismounted, without practice in which such duties as the covering of a party attempting to advance across the open by one under cover, cannot be intelligently performed. The blind worship of the straight line as an essential adjunct to military duty is unfortunately most prevalent in cavalry. I have known a small party, part of a general alignment, remain in a disadvantageous position where they could do nothing, when by crawling a couple of hundred yards they would have been capably placed under cover on a little rocky knoll. Their reason—given with the superior air of a man asked an idiotic question—was that "it would have put them out of the dressing." It is absolutely essential to teach men to take cover and make the most of cover, whether advancing or retiring. It would be an excellent thing if, when a squadron or larger unit were manœuvring dismounted, an infantry officer of experience were sometimes asked to watch them work, and give hints just as he might if he were watching an infantry regiment, judging them from the high standard exacted from infantry in this country and not with the half-amused toleration of the infantry soldier for the attempts of the horse-soldier waddling about on foot. They might, sometimes be pitted against infantry at dismounted work requiring handiness of manœuvring. Working with very thin formations should have especial attention, mounted troops being constantly called on to do so on service, as, in the event of being attacked in overwhelming force, their mobility saves them from disaster. This implies a great deal of decentralization of command, and troop officers should get plenty of opportunity to use their own judgment when in the firing line, as the supervision of a long line is impossible in action, where the squadron commander is often almost nailed to one spot, as any but a crawling movement on his part may mean certain death. Nothing is more disquieting when under heavy fire for the first time, than the feeling of one's own utter powerlessness to affect the course of events. Such a feeling would be intensified were subordinates accustomed to act only by order. The order would necessarily fail them just when they needed it most.

The value of perpetual turning movements in order to bring a converging fire to bear from different points should be instilled into all mounted troops, whose mobility gives special facilities for such tactics. A cross fire not only produces distrust of cover, but brings a sense of hopelessness in being the centre of hostile attentions while firing out into "the wide world" oneself.

It is obvious that opportunity for the above training cannot easily be found if the same amount of time be spent in acquiring ideal perfection in shock tactics as was the case a few years ago. For native cavalry, at any rate, where the men serve for fifteen years, two or three parades a month on the parade-ground, should be quite enough to keep them up to the required standard of efficiency for shock tactics, once they have learnt their work, plus a week on the parade-ground at the beginning of each squadron training. Hammering horses up and down a parade-ground at a tearing gallop may hold a little "eyewash," but anything beyond teaching them to charge with a fair alignment and cohesion at full gallop adds just exactly nothing to their efficiency for modern war, besides laming numbers of horses,—once badly sprained a horse has lost a great deal of his value for war. Cavalry charges are not carried out on parade-grounds, but across plough and broken ground. The smartest regiment will have inevitably degenerated into loss of trimness at drill long before their first charge, and the horses that rushed out of the ranks before will then only ask to be let lie down and die in peace, which puts the "tip-top" regiment at mounted drill on a level with the second rate by the time they get into a big action. Anyhow, more time is imperative for dismounted duty, and this must be considered even at the expense of some superfluous smartness in mounted drill.

Indian cavalry would very soon acquire high proficiency at changes of position without any recognized formation on a given objective. On an order being given in the firing line, "One troop stay here, remainder of squadron hold top of that hill a mile in rear," the men should be trained to canter off, each man taking his own line, mounting independently without noise or confusion and making his way to the point named, to act there under the orders of an officer who will have received instructions from the squadron commander as to the covering of the retirement of the remaining troop, who in their turn will scatter over a wide area and bring up behind any named cover. This practice should also be carried out in advancing, both mounted and dismounted. From numerous enquiries from surrendered Boers I found that with them hardly any other orders were given, the formation of advances and requirements being considered immaterial as long as the objective was reached with a minimum of loss and risk. It may be argued that no greater risk is incurred if the men are led across a fire-swept zone in extended order than if let go independently; undoubtedly it is always best to keep men thoroughly in hand if feasible. Still, in practice, it is found that it is often possible to dribble men independently across a piece of ground where even a very widely-extended

order would incur certain loss. A man instinctively does all he can to preserve his own life, and his chances are often decidedly better if he can take his own line without the necessity of conforming to those on either side, and the enemy cannot form any guess at even the approximate interval at which the men will show themselves.

Though words of command in cavalry have been reduced very considerably of late years, this might with advantage be carried still further.

Words of Command.

A certain amount of superfluous bellowing still goes on, which, under certain circumstances, might attract undesirable attention. "Fall in—Attention—Stand to your horses—Prepare to mount—Mount—The squadron will advance—Walk—March" might all be expressed by a low whistle and a signal with the hand. No word that could be avoided was allowed by Colonel Thorneycroft, and the men became all the more alert and independent by not being drynursed as to every movement. "Silent drill" already exists. It should invariably be used when possible. Confusion must result on service if men look for the usual word of command and do not get it.

In mounted units it is most important to train men to deliver verbal messages clearly and accurately.

Verbal Orders.

If intelligently carried out in peace-time, it not only fits them for the discharge of that important duty in war, but is a valuable means of imparting instruction in tactical comprehension to the ranks. I am aware that it is laid down, and very wisely, that orders should be given in writing in the field, that they should be numbered, timed, docketed, dated, etc., and when feasible this method should be used, as it all conduces to order and precision. For units not actually engaged there is no difficulty in doing this: but in the actual fighting line there is very little writing done with mounted troops. Whether this was the case or not in the more deliberate movements of the infantry I cannot say, as it is outside of my own personal experience. Why it should be so difficult with rapidly moving mounted troops is a matter into which it would be superfluous to enter: for practical purposes it is enough that it is so, as all who have "been there" know. This necessity for verbal orders is very much greater with Native cavalry, for the simple reason that hardly any British officer can write the vernacular sufficiently clearly and rapidly to send such written messages without risk of confusion and misapprehension: and dictating messages to a Native officer would be too slow and cumbersome. Besides, orders written rapidly under fire usually require supplementing by the messenger's explanations. "I am to move my squadron across to the hill on the right, keeping out of range of the nullah to the east. Which hill does he mean? And I can see no nullah from here. What am I to understand?" This is a very usual position for a subordinate in action on receiving a written message which seemed perfectly clear to the writer of it. In such cases all depends on the intelligence of the messenger and his appreciation of what is going on. This brings me to the point in the training which I want to insist on: that the message should invariably be given verbally to the messenger just as he were not

carrying any written message at all. This we found the best way in practice in South Africa. As a matter of training it should always be done ; such an order as " Take this letter to Captain Jones " or " to Ressaldar Ram Singh " should never be given : it is a waste of a valuable opportunity for training the messenger. How hopeless the average sowar is at giving a lengthy message correctly every Native cavalry officer knows,— unless he be taught. But he can be taught. The order should be written, if possible, and the gist of it explained to the messenger as in the following instance. " You see that hill there ? The one with the tree on it. Well, the enemy have got on to it since the Ressaldar went out. Tell him to come back at once, or he will be cut off, and to make his way back along the nullah there, so that I can check the enemy by fire from here if they attempt to attack him from the hill." The messenger would know that the order was contained in the paper he was carrying, and that any mistake he might make in its delivery would be found out as soon as it were read : he would be on probation over its correct delivery : and would, moreover, take a far more intelligent interest in what was going on were he thus taken into his leader's confidence.

All the men in a mounted corps should know how to find the direction of places from a map. More
Map-making and map-reading. will, of course, be expected from Native officers. They should know how to duly orientate a map on the ground, and then, given that they know their own position on the map, on any named village being pointed out on the map they should be able to point instantly to the direction they would take to find it. Actual experiment has convinced me that any native who can read can be taught this easily. Map-making, however, is for the few natural draughtsmen. The man who can only draw out a map laboriously by the use of instruments is not so much in request with cavalry as the man who can ride ten or twelve miles ahead from camp with a patrol to protect him, and in the course of an afternoon's freehand map-drawing give the commander something which gives him at a glance a rough but substantially accurate idea of the scene of tomorrow's possible conflict. I did a good deal of that kind of map-making, and found that where many miles had to be done in a few hours, no instrument was used but the ordinary mariner's compass.

Swimming should be practised with all horses. Many horses do
Swimming. not know they can swim, and give trouble accordingly on service. Practising the making of rafts out of lances and musselsacks, etc., is a waste of time. On service natural ingenuity will make the best use of materials, which will not, probably, be the materials expected.

Bicycles are no practical use with advanced cavalry in any country not covered with excellent roads.
Bicycles.

In South Africa we used long lines of wire or string, attached to
Aid for sentries. pegs, in front of sentries. A couple of empty tins were hung so as to clash

together on any one coming against the unseen wire. This did not give away the position of the sentry, who might have been a hundred yards to right or left and anything from five to fifty in rear of it. Openings were of course known to reconnoitring patrols, when patrols were used. The above method seems preferable, with mounted troops, to the use of dogs, which, even when trained, have only a personal power of recognition, and so are unable to discriminate between friend and foe, and would disclose the position of the sentry by barking equally at a returning patrol or visiting officer as at an advancing enemy.

CONCLUSION.

We have an alternative to reform : to remain complacently satisfied with our present training and methods. That must have one inevitable result in the next great war : that the cavalry will do convoy and baggage guard whilst the mounted infantry are pushed on to do their work. This is no fancy picture : it is what actually happened in Natal, and is one of the most painful recollections of the campaign.

I do not feel much doubt as to which alternative will be chosen.

THE RELATIVE FUNCTIONS OF CAVALRY AND MOUNTED INFANTRY.

BY LIEUTENANT-COLONEL C.B. MAYNE, R.E.

The primary object of this paper is to uphold the claims of cavalry proper as still having an essential rôle in modern and future war.

War is the contest for supremacy of opposing forces,*—moral, mental and material. Each side collects all it thinks necessary of these various kinds of forces in order to pit them against those collected by the enemy. But the effect of mobile forces depends on the rapidity with which they are moved and applied,—in Mechanics the effect of moving bodies is as the square of their velocity, that is to say that a body moving 2, 3, etc., feet a second will have 4, 9 etc., times respectively the energy of the same body when moving at 1 foot a second. Hence the great importance of providing for the dynamic use of all the forces made use of in war, as far as it is possible to do so.

The value of the mounted troops in war depends on the increased mobility they possess in virtue of being mounted. And by *mobility* we mean not merely speed, but *capacity to cover long distances at relatively high speed while still having some thing in hand at the end of the march for fighting or any other eventuality*. Exhausted troops are no longer mobile, and are practically of but little use without a period of rest that it may not be convenient to give them at the time.

On account of highly mobile troops being so desirable in war, it is very necessary, therefore, to consider the questions of the character of the mounted troops to be used in war and their rôles off and on the battlefield.

Since the Boer war began many English writers have again and again asserted that the days of cavalry proper are over, and that cavalry must take the lower form of mounted riflemen. Even many officers who have served in South Africa are openly preaching this doctrine, and also that the day of the bayonet is likewise over for infantry. As such teachings imply the entire setting aside of the lessons taught by the history of the past, the question of their correctness and validity is a most serious one to consider.

Everyone sees things from his own point of view and the majority of men (who are untrained to look below the surface of actual facts, a statement which also applies to the majority of educated men) are always deeply impressed and affected by their environment, especially if this environment is a striking one and long continued. The minds of the majority of men move along the line of least resistance, and so they tend to take things as they find them, and consider them as facts to be accepted as real and essential instead of looking to see whether they cannot be accounted for simply and logically in other ways,

* The word "forces" as used here includes the force-compelling elements embodied in the troop, as well as the troops themselves.

especially when the new facts are apparently in opposition to the historical teachings of the past. Human nature is a wonderfully conservative thing, and sudden reversals of past experience must therefore be always looked upon with suspicion.

The value of the lessons to be learnt from the Boer war entirely depends upon our being able to truly separate the *accidents* of the local warfare from the *substance* of warfare in general.

There are many special and peculiar local features and characteristics of the Boer war that have undoubtedly powerfully influenced British military opinion and given it an undue bias in certain directions. If we ignore these local features and characteristics, then the bias, if accepted as the truth, will only lead in wrong directions. And the question is, whether the local features and characteristics of the Boer war are ephemeral, being limited to the special circumstances of the war, or are permanent, being constant factors to be expected in all future warfare.

The special local features and characteristics of the Boer war are :—

The exceptional character of the country and climate, with its epidemics of horse sickness.

The want of roads about the country, and difficulty of water-supply.

The want of reliable maps and information about the country.

The exceptional mobility of the enemy who were practically all mounted infantry and had no cavalry.

The exceptional character of the enemy as "hunters."

The disloyal element in our colonies in South Africa.

The long and trying sea and rail transport to the theatre of fighting.

The enormous area of country to be operated over, and the exceptional exposure of our lines of communication to attack.

The pitting of townbred men against a race of countrybred riders and riflemen with wonderful eyesight.

The paucity of our cavalry and artillery arms, and the consequent overwork thrown on them and wastage of horseflesh.

The extraordinary errors made by the British Government in preferring dismounted men, in their estimate of the total force required, in the selected proportions of the arms, and in their unpreparedness for the war.

The totally inadequate provision made for land transport, and the unsuitableness of that provided for rapid movements, etc., etc., etc.

There were other special features in the Boer war, but which will be certainly found in future warfare, *viz.*, the use of modern small-bore, flat-trajectory, magazine rifle using smokeless powder, the invisibility of the enemy, the use of quick-firing field guns, etc. These being made use of for the first time in the Boer war, they produced a certain effect which come more or less as a surprise to us, and so for

a time disconcerted our troops and leaders, owing to the losses that ensued from a faulty handling of troops under the new weapons of war. But the first list of special features given above are peculiar to the South African war, and are not likely ever to be repeated again, except in so far as they relate to the mistakes made by our Government.

As a matter of fact our cavalry never had a fair chance from the beginning of the war. They were far too few in numbers and were given too much to do, which only resulted in their early breaking down. Even in October, 1900, we had only 9,000 cavalry in South Africa to 246,000 other troops, a proportion of about $\frac{1}{28}$ th instead of $\frac{1}{8}$ th or even $\frac{1}{4}$ th as it should have been in such a country.* And this was not all. Our leaders did not seem to know what cavalry could and could not do, and so did not know how to use them. Thus cavalry regiments were wrongly shut up in Ladysmith (and only served to make horse soup and horse sausages) and the want of these regiments had a most serious deleterious effect on the subsequent operations on the Tugela. Lord Methuen twice bitterly complained of his need of cavalry and horse artillery. The very treatment of our horses also is a most extraordinary feature of the war, and one it is to be hoped will never be repeated again. The cavalry from England were sent out *after* the other troops, and as things were not going on very well at the front, when they landed after their long sea voyage, they were hustled on to trains, and, after a journey of some days, and while thoroughly unfit, were immediately put to hard work on poor and insufficient food, in trying weather, while being too heavily weighted, and badly cared for. Besides this, badly fitting saddlery, want of shoes, and unaccustomed rations added their quota, while the home stall-fed horses did not know how to graze. The result was an enormous wastage of horses which were replaced by untrained and unfit horses, gathered from every part of the world, which also received a similar treatment to that stated above, resulting in 300,000 remounts having to be sent to South Africa during the years 1900 and 1901. Of course these remounts were for the mounted infantry and artillery as well as for the cavalry. But the lack of trained cavalry in South Africa, and the breaking down of their trained horses, caused untrained men and horses to be employed on essentially cavalry work which was consequently badly done, and the cavalry have been unduly blamed for it by an indiscriminating public. At the same time it must be admitted that our cavalry were not altogether free from blame in the matter of the way in which their scouting and reconnoitring duties were performed; on the other hand, it may be truly pleaded that our cavalry have never had given to them in peace-time any proper opportunities for learning such duties, and that this is the fault of the niggardly policy of our nation in all matters of war training.

But the point of the whole matter is that our cavalry never had a chance in the Boer war to prove their worth as cavalry proper. The fewness of their numbers, and the breaking down of their trained horses, compelled them to more or less adapt themselves to the

* That is to say if no mounted infantry were contemplated, as was the case at first. With mounted infantry the proportion of cavalry to the total force may be reduced, if the mounted infantry are used as is contemplated in this paper.

mounted infantry with whom they had compulsorily to be so closely associated. And so we learn the oft repeated lesson that money cannot buy discipline, training and skilful leading, however willing men may be to enlist from patriotic motives.

An army is a living organism with mutually inter-related parts—the magnitudes and relations of the parts depending on the special conditions of the war being undertaken. The failure of our Government to provide a proper proportion of arms in South Africa has already been alluded to. An army in the field has, generally speaking, two special duties to perform, *vis.*, (1) the collection of information on which to act, or *khobar* and (2) the putting into execution force-compelling activity, based on the conjectures formed from the information collected, or *bandarbust*.

The duty of collecting information is combined with that of preventing the enemy from obtaining information. These duties are collectively called *scouting* or *reconnaissance*; and they should be carried out on a very wide front of many miles and at such a distance ahead of the marching columns in rear as to enable the latter to receive information in time to act opportunely and correctly. This means that the reconnaissance and scouting work, which is very arduous and trying, must be carried out by mounted troops who possess the requisite means of mobility and training for the work. It is absolutely necessary to collect information about the enemy and the country passed over on a wide scale; the information required has to be gathered bit by bit, collected at suitable centres, and sent back to headquarters to be there pieced together and conjectures formed on the enemy's intentions. On these conjectures (often based on erroneous and partial information) the orders for the ensuing operations are issued, based on what it is supposed the enemy will be probably doing when the orders are being acted on. Hence we see the importance (1) of getting correct information, and (2) of rapidly transmitting it to the rear so to get timely orders issued to the troops concerned.

Now this reconnaissance and scouting work requires for its execution a body of specially trained and fit men and horses. The men have not only to be trained in scouting work and in reading signs of the enemy, but the officers should have a good insight into the meaning of strategical movements so as to know the value of the information they collect.* And in order to enlarge the sphere of collecting information and transmitting it, some of the troops engaged in reconnaissance work should be trained in telegraphic work† and all should be signallers, and they should be accompanied by balloons and carrier-pigeons and trained messengers or orderlies. Consequently we see that the mounted troops required for reconnaissance and scouting work off the battlefield require a special training and organization, differing very widely from that required for infantry proper, whose main rôle lies on the battle field. But as all troops should be capable of taking part in the decisive act of war—the battle—we shall consider later on how troops trained for reconnaissance and scouting can do so without impairing their primary usefulness off the battlefield.

* In fact cavalry officers especially require a very high training in the art and science of war, in all its branches, if they are to carry out their duties efficiently. But our present system of obtaining and training cavalry officers in no way secures this.

† Wireless telegraphy may prove of much value in this work.

As has been already stated the work of reconnaissance and scouting involves the double duty of (1) obtaining timely information and (2) of warding off the enemy's attempts at doing the same thing. That is the advanced mounted troops have (1) to reconnoitre and scout the enemy and (2) to protect the line of scouts from being seriously broken through.

The new rifle with its smokeless ammunition, and the possible invisibility of the enemy, which together contribute to what is called "the containing power of the modern rifle," have made reconnaissance and scouting work harder than ever. In South Africa long lines of scouts, at considerable intervals apart, moved across country until they were fired on. But the sound of the firing and the bullets arriving rarely gave any indication of the exact positions or numbers of the enemy in front. Consequently a well scattered and concealed mobile enemy, armed with magazine rifles, were often able to keep many times their numbers at bay for some hours. If the scouting line was long enough, the unchecked portions of it were able to move forward to take the opposing enemy in flank or rear; hence the necessity for a long scouting line extending over some miles of front.

In the vicinity of the enemy the scouting line should remain where it finds itself when the halt for the day is called. This is a very necessary thing to do. But in South Africa the advanced troops were invariably drawn back into camp at night—a very unwarlike proceeding which allowed the Boer to cross and recross our strategic lines at will to our great annoyance, and to harry our camps by fire from a safe distance. But the fewness of our cavalry, who should have been trained for scouting work, and the consequent compulsory employment of mounted infantry, who were not trained for it, was at the bottom of the procedure we have described; perhaps also this procedure was adopted because the country-bred Boer, accustomed to hunting game, was better at night and stalking work than our town-bred troops who had had little or no practice at either night work or stalking an enemy. Had our cavalry been sufficiently numerous and had they been properly trained, and kept day and night at scouting work, the Boers would not have scored so many partial successes as they did. A few men might have been lost, but far fewer than under the present system. However we can never expect our cavalry to be good at such work until they are allowed to constantly practice over wide stretches of country in peace time.

The scouting line requires to be periodically relieved to enable the men and horses to be fed and watered, and to be quartered under shelter during bad weather when not actually scouting. These reliefs must be supplied by the units providing the scouts. Consequently the scouting line must be backed up by small bodies of mounted troops, who will provide the necessary reliefs and collect and transmit the information collected by the scouts. Further in rear will come the troops on whom will lie the duty of preventing the scouting line from being seriously broken through by the enemy. As this duty of protection simply involves fighting, it can be performed adequately by mounted infantry and horse artillery. If these latter

arms are not available then cavalry must carry out, as in the past, both the reconnoitring and protective duties, but only at the cost of a shorter scouting line and of greater work and wastage of valuable trained horses.

Consequently the logical conclusion is that cavalry and mounted infantry are best used in combination : the cavalry for carrying out the strategical reconnaissance, and then, when the enemy's general position is located, the mounted infantry carrying out the tactical reconnaissance and attack on foot. If this is not done then valuable cavalry, that cannot be replaced, will be uselessly sacrificed ; of course cavalry may have to dismount and press the enemy, but such a course of action should be avoided whenever it is possible to use other troops for the purpose.

This brings us to the question, whether mounted infantry cannot be trained equally well as cavalry (in the old sense) for reconnaissance duties? The answer must be—No ! It has already been pointed out that the troops required for reconnaissance work *on a wide scale* require is special training. And this training is such that, if properly carried out, the same men cannot be adequately trained in the battle functions of infantry, *vis.*, the slow covered extended advance during a fire combat ending in a rapid and more or less massed decisive bayonet attack, and preceded by a localised tactical reconnaissance of the enemy to fix his exact positions. The two duties of the strategical reconnaissance on a wide and extensive scale, and the tactical reconnaissance and battle on a narrow and limited scale, are so widely different and so specially technical that they cannot be both carried out efficiently by the same short service troops of to-day. And therefore they must be allotted to different troops, if they are to be satisfactorily carried out.

It has already been stated that all troops in the field (even those employed on reconnaissance work) should be available for use on the battlefield. Hitherto cavalry have been trained for battle purposes mainly in mounted shock-action in mass* and in dismounted fire-action in extended order. The latter procedure has largely come to the front in South Africa ; but this has been owing (1) to the enemy having no cavalry proper, and being practically composed of mounted riflemen using the modern magazine rifle, with smokeless powder and hidden behind concealed positions, and (2) to our cavalry being far too few in numbers to carry out their reconnaissance work out on a continuous and wide enough scale. The overwork that fell upon our few cavalry soon

* The very biting and school-training of the horse, and the seat and school-training of the cavalry man, find their chief *raison d'être* in the hand-to-hand encounter. These things were introduced in days when the personal combat was the ideal of cavalry fighting, and when, therefore, the movements of the horse were as important as the movements of the man ; and hence the necessity for the man being able to control the movements of the horse by means of a powerful curb bit and spurs, and a special military seat. But the *primary* importance of such things has now long passed away. The overwhelming of an enemy by a charge is effected, not by a series of personal combats, but by the momentum (*i.e.*, mass multiplied by velocity) of the charging body as a whole. The modern bit should, in the writer's opinion, be like the Liverpool bit, capable of being used normally as a snaffle bit for quiet horses, and occasionally as a light curb bit for restive horses, by a mere alteration of the points of attachment of the reins. The lower portions of the cheeks of the bits should not be so long as to prevent grazing and drinking without unbridling.

destroyed their trained horses and caused them to be remounted on inferior and untrained animals, and thus soon completely took away from them their usefulness as cavalry proper, and compelled them to assimilate themselves with the mounted infantry with whom they were associated. Consequently the Boer war in no way decides against the use of cavalry in shock action, which history shows so often to have afforded great decisive results when wisely applied.

The opponents to cavalry say that, in the face of modern weapons, the shock action of cavalry in mass and at speed is no longer possible, and that therefore cavalry must necessarily develop into mounted infantry. Before discussing this let us first see what are the ideals of cavalry and infantry in battle, and what are the benefits accruing from a successful charge whether of cavalry or infantry. The ideal of both these arms must always be the charge at full speed in more or less massed formation with a stabbing weapon in hand. This is the ideal, and all that takes place before this—manœuvring and firing and strategem—is only undertaken to make the ideal feasible and possible. The effect of a successful charge is, as history shows, beyond everything demoralizing and disorganizing to the beaten side, for it simply smashes him up, and more than anything else compels his surrender or destroys his power of resistance in the future. *The whole object of the preliminary phases of a battle is to bring about the possible application of decisive superior brute force at the right time and right place.* The army that has not this ideal before it will never do anything great. The evidence of history is complete and undoubted on this point.

Now, as has been already stated, the cavalry is an arm specially trained for reconnaissance and scouting work on a wide scale. In this special work it is of such undoubted value that it would be folly to cripple an army by exposing its cavalry to hostile fire in such a manner as to cause it to suffer undue losses. History shows that cavalry in the past (when they were not so much used for scouting work as nowadays) performed most effective and decisive work on the battlefield by its terror-inspiring charges in mass; but it also shows that such charges ended in disastrous failure if the enemy were not previously demoralised, or were not surprised at short range, or had not had their ammunition used up or spoiled by rain. *This was in the days of the old flintlock muzzle-loading musket, and yet we never read that military opinion in those days considered the day of cavalry was over because unbroken and unsurprised infantry could shoot them down. Identically the same conditions for a successful cavalry charge are required nowadays as in the past.* And where modern cavalry charges have failed, it is because the conditions necessary for their success have not been first secured. Consequently to the question—Is the day of cavalry charges in mass over?—the reply must be No! For example, take the fight at the Modder river, where our troops were for many hours lying out in the burning sun without food or water, under a heavy fire, and with no ammunition; supposing our troops in the centre had been suddenly charged late in the afternoon by a considerable body of hostile cavalry, can there

be any doubt as to its success? Again at Magersfontein where our gallant troops suffered so heavily in the early morning, and yet remained for some ten hours longer under fire; were they in a condition to repel a determined cavalry charge, had one been directed at them, when we read that they fell back before a threatened flank attack of dismounted men? The danger of the modern rifle is a greater expenditure of ammunition than can be adequately replaced under fire, and therefore we must expect that cavalry may find many fair opportunities for a straight and decisive charge home in future fighting. And it must be remembered that the moral effect of an infantry charge is in no way comparable to that of a thundering mass of cavalry, moving at speed, and appearing suddenly upon exhausted troops who cannot get away from them. If a cavalry charge proper is carried out at the right time and under right conditions, the losses that may occur will be more than counterbalanced by the great tactical influence of the successful charge; and great tactical successes have their due beneficial influence on the strategical operations that follow. Of course cavalry may have to be sacrificed as they were at Mars-la-Tour in 1870, but the leader who decides on making the sacrifice will have to face a graver responsibility than in the past, for the work of reconnaissance has since then grown in value and it must be remembered that trained cavalry cannot be replaced during a war. During a battle cavalry should act on the flanks of the troops engaged in order to keep off and engage hostile cavalry, unless they are specially ordered elsewhere to act decisively at some other point of the line of battle.

But during the later phases of the Boer war we have been confronted by certain facts that must be somewhat puzzling to the theorist. Of late we have read of so many instances of mounted men charging on horseback, in open order, up to the muzzles of the rifles of the other side without undue losses, especially under cover of dusk, or twilight, or of bad weather, or of the smoke of grass fires, or behind droves of cattle, or disguised in hostile uniforms. However, the possibility of charging home in open order in the face of modern firearms has been clearly shown, and, as modern infantry is likely to be widely extended for a considerable period during a battle, it opens the door to a revival of more distinct cavalry action or participation in future battles, especially if cavalry move forward at speed, in more or less loose formation against used-up or surprised extended infantry and not in such solid masses in the past. Unsupported extended troops will run a special danger in this respect. This opens up an interesting line of thought which we cannot here pursue further. However it may be pointed out that General French galloped in mass through the Boer lines on his way to Kimberley, and DeWet similarly galloped in a loose mass through our lines at Springhaan Pass.

For a cavalry charge to be effective the advancing horsemen must not be too much separated or else the charge will lose in that all-important factor, moral effect; and further the number of men charging must be sufficiently great relatively to the moral and material strength of the foe attacked. At Talana Hill the pursuing squadron was far too small to effect anything serious, and was consequently soon surrounded and captured by Boer forces that had not been demoralized, while at *Elaandslaagte* good work was done by our cavalry as their numbers

were in better proportion to the enemy who was charged. Soon after this fight the cavalry degenerated, for the reasons already stated, and became merged into the large number of mounted infantry they became associated with ; and so practically disappeared as cavalry.

It must be remembered that an army suffers out of all proportion for any want it may have of cavalry proper, trained to reconnaissance and intelligence service. And this has been our condition in South Africa. And the difficulties of this work were greatly added to by our having no knowledge of the languages of the country and no reliable maps, and by the natives having no confidence in the success of our arms. The enemy, on the other hand, were *all* well mounted for their purpose and highly mobile, were acting in country well known to them, and among a sympathetic people who supplied their needs freely and reported all our doings.

In this discussion we must remember that though the mounted infantry in South Africa were mounted on ponies and horses, yet such a means for increasing their mobility is not an essential one ; infantry can be, and have been, conveyed in carts and wagons, and on camels, to increase their mobility, and may nowadays be mounted on bicycles and auto-mobiles where a suitable road system exists. Troops transported in carts and wagons come in fresher at the end of a march than those who have ridden, and can carry more with them while saving the horses, but then roads are essential. It was the absence of roads in South Africa that necessitated all our mounted infantry there being mounted on horses. It has been suggested that *mobile infantry* is a more comprehensive term than *mounted infantry*, but the latter term has now come into such common use that it seems hardly wise to try and change the term since infantry must be "mounted" on wheeled vehicles of some kind if they do not ride.

The origin of mounted infantry arose in the demand for a rapidly moving force of infantry *capable of acting with (but not in the place of) cavalry* in order to relieve the latter of duties that could be equally well performed by infantry. Such mounted infantry must therefore be capable of covering considerable distances at speed in order to seize and hold important points, or to perform other duties that cavalry would otherwise be called upon to perform to the detriment of their primary duty of reconnaissance and intelligence service. But up to the present there has not been in any army a permanent organisation for mounted infantry. The Boer war will probably lead to such an organisation being formed on a more or less permanent footing.

We are now in a position to point out the differences that differentiate cavalry proper from mounted infantry, and it will be seen that these differences are to be found in the relative characteristics of their means of mobile conveyance, in the nature of their respective duties, and in the methods required to carry them out. The chief differences may be classified under four heads.

(1) The first difference between cavalry proper and mounted infantry lies in the character of their mounts. Cavalry must always be mounted on horses ; mounted infantry may be mounted on wheeled vehicles.

But supposing that both are to be mounted on horses, then as cavalry have to move over wide stretches of country, in carrying out their arduous and trying reconnaissance duties for which they are specially trained, they must be given strong, active and well trained horses for the purpose. But when an adequate cavalry and artillery force has to be provided, the number of horses available for these arms, and for providing the necessary remounts for them, are limited in quantity. Mounted infantry, on the other hand, do not require anything like such good or well trained horses, and consequently they may be given such horses and ponies as are not fitted for cavalry or artillery work. These smaller horses are, moreover, more easily mounted, which is an important consideration. The Boers would have nothing to do with a horse over 15 hands in height. This distribution of mounts is also desirable for financial reasons. We must remember that mounted infantry are infantry pure and simple, and are not trained in peace-time to the work of cavalry reconnaissance and scouting, and, from what has been said, nor is it desirable to do so. But the lack of cavalry in South Africa, and the wastage of their horses, compelled us to make use of untrained mounted infantry in the peculiar reconnoitring work of cavalry, with the result that it was badly done and we suffered heavily in consequence.

(2) The second difference between cavalry proper and mounted infantry lies, or should lie, in the importance that they should respectively attach to their means of conveyances. A cavalryman separated from his horse is no longer a cavalryman, and while on foot can only make a bad infantryman. Moreover a cavalryman should be primarily a trained scout, and unless he is made use of as such his main purpose and rôle is gone. But a mounted infantryman separated from his mount is still an infantryman, and can act as such. Moreover he should be primarily a trained rifleman and fighter on foot. Consequently the relative importance of the means of conveyance is very different in each case. Cavalry can only safely dismount three out of every four men, besides leaving a mounted detachment to protect the led horses, which should be concealed behind cover. But with mounted infantry every man ought to be available for a serious fight; their means of conveyance has done its duty in getting the men to the battlefield, and it should then be discarded for the time being, while being herded or parked under a few care-takers. If this is not done the mounted infantry will soon ape being bad cavalry and will learn to think so much of the safety of their means of conveyance, as to make them inefficient fighters, *e.g.*, the disaster at Tweebosch where General Metheun was taken prisoner,—half his force apparently made for their horses and cleared off instead of stopping to fight although the Boer force was but little stronger than ours. If these men had not thought so much of their horses they might have saved the day. In South Africa the paucity of cavalry made the mounted infantry, who had to do cavalry work, think more of their horses than they should have done, and this fact seriously impaired their utility on many occasions. The Boer horses were trained to stand still when left alone, and were left in charge of a few Kaffir boys. The Boers made the mistake of thinking

too much of their horses, and so generally cleared off in the face of approaching danger with the result that they never gained any such decisive tactical result as could influence the course of the war. This negative tactical procedure of the Boers limited their powers of injury, luckily for us, but their example is one to be avoided, not followed. If the means of conveyance of a corps of mounted infantry is captured or destroyed, they can still act as infantry, and, from the character of their mounts, they are far more easily remounted than cavalry.

(3) The third difference between cavalry proper and mounted infantry lies in their mode of fighting. Cavalry are nowadays raised, organized, and trained primarily for reconnaissance and scouting duties, and for carrying out a decisive charge in mass *only* when a favourable opportunity occurs. Cavalry proper may have to act dismounted with firearms, but their fire-action can only be a makeshift because they must consider their horses, and because while separated from their horses they can hardly be called cavalry, but inferior infantry. Cavalry are too valuable for other purposes to be used up in imitating infantry in their special mode of fighting. The most that they should be expected to do when dismounted is to form a thin skirmishing line for a temporary purpose, and then only chiefly for defensive purposes. As cavalry have no bayonets they should never be expected to seriously press home an attack on foot except under very exceptional circumstances. Their dismounted fire-action should, therefore, be more defensive than offensive in character. It must be remembered that cavalry are specially trained men who cannot be replaced, and so if they cannot opportunely charge home under favourable conditions they must try and get within range of the enemy (on his flank if possible), and utilize their firearms until a favourable opportunity offers for mounted shock action. Mounted infantry, on the other hand, should hardly ever think of charging on horseback as a normal mode of fighting. If they do charge on horseback towards an enemy it would be more for the purpose of approaching him rapidly so as to prevent undue losses, and then to dismount for the fire-fight from behind cover. The mounted infantry having bayonets would endeavour to carry out their fire-fight and approach so as to render a decisive bayonet attack or cavalry charge feasible and possible. Further the relatively weak character of the conveyance of mounted infantry precludes, as a rule, any idea of any rapid movement (such as the gallop) over any considerable distance, such as cavalry are expected to make, without seriously blowing their horses.

(4) The fourth difference between cavalry proper and mounted infantry lies in their respective general rôles in the field. As has already been pointed out the mounted troops in advance of an army have a double duty to perform, *vis.*, (a) procuring information and (b) affording protection. Mounted infantry are not trained in the first of these duties, nor can they be without seriously interfering with their utility as infantry, because the spirit of the cunning scout and of the bold fighter are quite opposite in character and require different modes of training to cultivate them. The cavalry should only rush into an infantry fight *after* any real danger from doing so has passed, that is

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after the enemy has been thoroughly demoralized and made incapable of serious resistance. Hence the duties of scouting and protecting indicate both the respective rôles of cavalry and mounted infantry,—when each is present in adequate strength,—and their proper connection for mutual co-operation. It is wrong to use mounted infantry for reconnaissance work whenever it can be avoided, since neither they nor their horses are trained or fitted for it. This reconnaissance work should be left to the trained and better mounted cavalry, but the work of protection can be, and should be, well left to mounted infantry who should follow sufficiently close behind the cavalry screen to enable them to support it and prevent its being seriously broken through at any part. If mounted infantry are not forthcoming for this work, then the cavalry must perforce do the double duty at the cost of shortening the scouting line and a greater expenditure of energy and wastage of horseflesh.

Consequently *the normal duties of cavalry* are the strategical reconnaissance and the decisive charge when a favourable opportunity arises, dismounted fire action being only made use of as a makeshift in the absence of infantry ; and *the normal duties of mounted infantry* are the tactical protection of the wide-spread strategical scouting line and the dismounted tactical reconnaissance and attack of positions. Both of these sets of duties are of essential importance, and hence, as cavalry proper cannot be replaced if once destroyed, we must conclude that, to obtain the best results in the field, both cavalry and mounted infantry are nowadays necessary, each in adequate numbers and working together in harmonious combination.

It may be here stated that if specially trained orderlies or messengers (mounted on ponies, or bicycles, or auto-mobiles, etc.) are not attached to the cavalry for the sure transmission of the information collected, then this work should be undertaken by the mounted infantry, who should invariably relieve the cavalry of every duty that it is possible for them to do without impairing the efficiency of the arduous and trying scouting work.

Naturally when mounted infantry are mounted on ponies and horses they have many features and duties in common with cavalry, such as the feeding, watering, and care of their animals ; the fitting of saddlery and shoes ; the question of the weights to be carried ; the need of remounts and of measures for reducing the wastage of horseflesh ; need of being able to read country and maps and signs of the enemy ; the crossing of rivers ; the range of vision and need of field-glasses, etc. But we are not so much concerned here with what cavalry and mounted infantry have in common as with what differentiates them from one another, since so much haziness exists about this important subject and so many superficial opinions have been formed about it in regard to the Boer war. There are many duties which cavalry and mounted infantry can carry out in common, though they would carry them out in very different ways, and some could be done better by one arm than by the other ; we can instance such common duties as—

- (1) to seize and hold distant strategical points ;
- (2) to relieve distant hard pressed troops ;

- (3) to turn and attack the flanks and rear of hostile positions* or to bring a flank or enfilade or rear fire to bear on them;
- (4) to aid in the pursuit of a beaten foe;
- (5) to escort convoys;
- (6) to collect supplies;
- (7) to form flying columns and carry out distant raids;
- (8) to drive off the enemy's troops delaying a march;
- (9) to delay at a distance the advance of an enemy or of hostile reinforcements, and to harry his columns;
- (10) to act as advanced, flank and rear guards;
- (11) to take up outposts until relieved;
- (12) to act as mounted patrols to outposts or as messengers or orderlies;
- (13) to escort artillery in battle.

Most of these duties could be better done by the cheaper and more easily raised mounted infantry than by the more expensive and more difficultly raised cavalry. But it is only trained cavalry who can efficiently carry out the advanced reconnaissance and scouting work, though mounted infantry can well relieve it of the protective and messenger duties in connection with this work, and give the scouting cavalry such a solid backing as will enable it to greatly extend its sphere of operations, and therefore usefulness. On the other hand, mounted infantry will probably find a very large sphere of usefulness in battle in rapidly reinforcing gaps in the line of battle and in prolonging flanks,—duties which cavalry could not be expected to perform with much efficiency from the very character of their training.

As the value of all mounted troops depends on their mobility, their baggage and reserve ammunition must be as equally mobile as themselves by making use of spare horses and ponies or light carts. In some of the Boer commandos each man had three horses and their mobility was extraordinary. The transport and reserve ammunition of the smaller units of the mounted corps and their internal administration should be on such a footing as will enable them to be readily detached without dislocating the administrative arrangements of the larger units that provide them.†

We can now state more or less clearly the proper employment of cavalry and mounted infantry in future wars. These we have to consider off and on the battlefield.

The proper employment of cavalry off the battlefield consists in reconnaissance and scouting, and for this the men and officers should be specially trained, including the collection and transmission of information to the rear, and the working of telegraphs, signalling, balloons and carrier-pigeons. This work includes the inspection of

* The great mistake we invariably made in South Africa was in not striking far enough to the rear; we almost invariably made for the ends of the flanks instead of striking well in rear of them.

† This method is adopted for Royal Engineers and Sapper and Miner Companies, whose unit of organization is the company.

telegraph, post and newspaper offices, the art of questioning inhabitants, reading signs of the enemy, map reading, collection of supplies, etc. All this requires a considerable organization and technical knowledge of a special character. If cavalry have to carry out the protective as well as the scouting duties, then they should have trained mounted orderlies or cyclists attached to them for transmitting the collected information to the rear so as to save the cavalry as much as possible for higher duties.

Naturally the difficulty of securing combined action over a wide front will be very great, and this difficulty can only be minimised by constant practice in peace-time, and by a full use of the aids of telegraphy, signalling, balloons, etc., as an organised part of the strategic cavalry units.

The proper employment of cavalry on the battlefield consists in the dismounted fire action in a fire-fight and mounted shock action in a charge. When cavalry have to dismount and take part in a fire action, they must not press forward seriously like infantry would, as cavalry have no bayonets, and are too valuable for other purposes to be used in such a way, since they are specially trained men who cannot be replaced. And those occasions on which cavalry may be called upon to dismount to use their firearms are never likely to be of such a serious tactical nature as will affect the course of the operations. When cavalry can charge home in mass (loosely against infantry or in solid lines against cavalry) *without undue losses* they should do so from the great moral and smashing effects of such charges. The conditions for the successful carrying out of cavalry charges have been already alluded to, and if cavalry cannot find a good opportunity for doing this without crippling losses, they can still make use of their firearms dismounted while waiting for a favourable opportunity for charging home.

The weapons for cavalry must be (1) a firearm and (2) a sword or lance.* As regards the latter, the lance is generally considered as a queen of weapons in a charge, but the charging of cavalry in battle, which was at one time considered as *the* primary rôle of cavalry, has nowadays become relegated to a secondary position. The primary work of cavalry nowadays is reconnoitring and scouting, and for this work, as well as for dismounted work, the lance is most unwieldy, and it is moreover so inconvenient a weapon in a *mêlée* that it is common to find the rear rank of a squadron armed with swords when the front rank have lances. Our forefathers, who were essentially horsemen and swordsmen of a high type, invariably used a long, straight and fairly light rapier or sword, in fact a miniature lance. A lance at rest can be easily moved towards the swordsman's right, or the lancer's left, in parrying with the sword and the sword point brought into play at the same time. And if this was practised, *under field conditions*, the lance would probably not be held in such repute as it now is when opposed to swords designed and used for cutting.

The lance also is heavier than a sword and is less easily carried.

The carriage of the weapons has also to be considered. The firearm should be slung to the man and not carried in a bucket which only

* It is probable that the claims of the revolver as the cavalry "hand weapon" may be revived under modern conditions.

impedes the horse's movements and so assists in fatiguing it. Further if a cavalryman is dismounted by being thrown he still has his firearm if it is slung on him ; his ammunition would be carried in a bandolier and his sword on the saddle on the offside. This leaves the man free when dismounted and able to mount on either side. These proposals were made by a committee assembled by Lord Roberts *after* the experience of two years' fighting in Afghanistan (1878-1880). The saddle should be made much lighter than it is at present, and this could be easily done if less was carried on the horse, and more carried on carts or extra pack ponies or horses. Many cast horses could be utilised for some years in this manner with economy to the State.

Of course cavalry must be organized into distinct bodies. And there is nothing to be said particularly against the present organization.

As regards *the training of cavalry*, we see from what has been said, that every individual cavalryman should be specially trained as a scout, both in mind and body. He should be taught how to act independently, but in co-operation and in accordance with the general idea. He should be able to read ground, maps, and signs of the enemy, and know how to make use of ground and cover. He requires good eyesight and hearing, should be able to send and read signals, and taught to copy the cunning of wild animals. As scouting is a gift, it can only be carried on to a high degree by the few men. Consequently the Germans have adopted the principle of collecting together the specially gifted men as *special scouts* in each squadron and giving them a distinctive uniform. Major-General Baden-Powells' work on scouting can only be realised by a few men only. A good field-glass should be carried by every officer and non-commissioned officer of cavalry.

The cavalryman's horse must also be specially selected and trained. It must be up to the work and of a quiet disposition and trained to stand still when left alone, to move with ease over rough ground, to lead well, and to feed by grazing.

Besides the above, the cavalryman and his horse must be *trained in collective action* for manœuvring and for carrying out a charge.

Officers' patrols (presumably well mounted) will not under the new conditions be used so much as in the past. But, if used cunningly, they may be employed to find out if the enemy is present in certain localities beyond the limits of the strategical front being reconnoitred by the cavalry.

The proper employment of mounted infantry off the battlefield consists in carrying out the protective duties of reconnaissance work in support of the scouting cavalry. They should also, in the absence of special orderlies raised and trained for the purpose carry out the duty of transmitting the collected information to the rear. *As regards the proper employment of mounted infantry on the battlefield* they should only fight on foot as infantry and never attack mounted. Their means of conveyance is only intended to carry them to the place of combat, and, once arrived there, nearly every man should be available for the fight by herding or parking the means of conveyance under a few caretakers.

The weapons of mounted infantry are the rifle and bayonet. The latter should be carried horizontally on the waist belt at the back like

a hunting knife, so as to be out of the way in mounting from either side of a pony. The ammunition should be carried in a bandolier and the rifle carried by the man in some convenient way.

In order that mounted infantry may be successfully used in the field they should be organised, equipped and trained in peace-time, and given properly trained animals and carefully taught how to look after them. This latter point is a very important one to prevent undue wastage of horseflesh. The saddlery should be of the simplest character possible.

Up to the present there has not been any permanent mounted infantry organization for fear of their aping and becoming indifferent cavalry. In South Africa the mounted infantry were extemporised and were quite untrained when first raised, though later on they became more or less expert under the rude lessons of experience. But the war has shown that some kind of organization is necessary for mounted infantry, who have proved their utility and necessity for war. However, financial considerations must be borne in mind. Mounted infantry need not always be mounted on horses and there is the danger of permanent corps aping to be cavalry. General Bengough has perhaps made the best proposal, *vis.*, to attach a 9th company of mounted infantry to certain suitably stationed battalions. The whole of this company need not be mounted in peace-time. This will provide the battalions concerned with means to protect themselves on the line of march by men belonging to the battalions. Owing to the range and efficiency of modern rifles there is no doubt that all scouting duties on the march must be carried out by mounted men, if a force is to move rapidly and in safety. General Bengough's proposed organization is a good one for this. When the battalions are brigaded, the mounted companies can be assembled for common action under a nominated leader of experience. These companies can be divided and made the nucleus for adding such additional men as may have been previously trained and had been relegated to the dismounted companies of the battalion.

As regards *the training of mounted infantry*, they need not be taught more than ordinary infantry, beyond the riding and care of their horses and the performance of messenger duties for carrying information. A Boer officer described our mounted infantry in South Africa at the beginning of the war as spending their time in holding their hats on.

Where mounted infantry are extemporised for the occasion they are of but little real use for some time afterwards. There is a great tendency for financial reasons to accept the principle of extemporised formations. As mounted infantry are more easily raised, equipped and trained than cavalry, volunteer and irregular corps are better adapted for mounted infantry than for cavalry which requires very highly trained men and horses, and better horses and better riders than can be expected with mounted infantry. But there is one great objection to extemporised formation of raw *personnel*, and that is the men do not receive sufficient training to acquire the proper military instincts for assuring security, and for making and meeting stratagems, however good shots and riders they may be. Mounted infantry should of course be able to shoot well and to ride sufficiently well to manœuvre with fair order. One effect of modern

weapons with smokeless powder is to increase the necessity of training all troops in the art of laying and preventing ambushes and surprises, and of reading signs of the enemy. These subjects require close study and practice.

The mounted infantryman's horse should be of quiet disposition and trained to stand still when left alone, to move with ease over rough ground, to lead well, and to feed while grazing, both when alone and when with others.

Matters common to both cavalry and mounted infantry.—The great amount of physical work that has to be performed by mounted troops, under adverse circumstances of climate, feeding, housing, etc., points to the need of *always* considering the loads to be carried, the relieving of the horse of all unnecessary fatigue and exposure, the periodic refitting of the saddlery, and the best kind of man and horse fitted for the work. Short cobby horses did best in South Africa, but they should not carry more than 15 to 16 stone. For the preventable reasons already stated the wastage in horseflesh in South Africa was enormous. Hard and long marches over bad country, heavy loading, overworking, insufficient and indifferent feeding, want of care and shoeing, trying weather, bad condition, etc., killed off our trained horses in thousands which were only replaced by ill-trained or non-trained horses that prevented the work of reconnaissance, etc., being properly done. The wastage of horseflesh in South Africa shows the price that has to be paid for mobility if we do not, at the outset of a war, provide sufficient trained cavalry and mounted infantry for the work they have to do, and take sufficient care of them in every way. A body of 70,000 mounted and trained men and horses at the outset of the war would have told a very different story; however it is easy to be wise after the event. But in any case an adequate supply of trained men and horses is required in every war to easily replace casualties and wastage.

The mobility of all mounted troops depends on the strength and endurance of their horses, and this strength and endurance rapidly diminishes under bad feeding, bad care, badly fitting saddlery, overloading, exposure to trying weather, continuous hard-work, insufficient rest, etc. The absence of any adequate peace training in our army prevented our troops learning how to husband the strength of these horses, and to realise the enormous value of riding light and carrying all necessities on spare animals or light carts. Continuous exercise and training is needed to increase the powers of endurance of both men and horses; to get good results, trained and fit men and horses are required; and this is more necessary for cavalry than for mounted infantry. All training should be over rough country.

Lieutenant-Colonel L. Rolleston of the 3rd Imperial Yeomanry has pointed out that the moderate rider could never have a chance with such born riders as the Boers, and that the only arm to deal adequately with them on many occasions was trained cavalry charging weapon in hand. In the official report on the Imperial Yeomanry it is suggested that Yeomanry officers should be periodically attached to cavalry regiments for instruction. This latter recommendation is rather a dangerous one since it may induce such officers to imitate cavalry tactics, but the report advocates the rifle as the weapon for Yeomanry.

If cavalry have to carry out both reconnoitring and protective work, experience has shown that they should nowadays number $\frac{1}{4}$ th to $\frac{1}{3}$ th of the whole force that takes the field, supposing this force to be a large one,* and the country favourable for cavalry action. If the protective duties are to be carried out by trained mounted infantry then the cavalry may be $\frac{1}{4}$ th to $\frac{1}{3}$ th of the whole force, considering the greater difficulty of their work in the face of the containing power of the modern magazine rifle and the invisibility conferred on the enemy by smokeless powder. A cavalry brigade might well be composed of two regiments of cavalry and two battalions of mounted infantry. Such a brigade, composed of 1,000 cavalry and 1,200 mounted infantry,† could well reconnoitre a front of 15 miles, the scouts working in pairs, with each pair 200 yards apart, and only $\frac{1}{4}$ th of the cavalry scouting at a time, the remainder moving in support and providing reliefs. Guns would be added as required, and would march with the mounted infantry in rear. In addition to these, additional mounted infantry corps would be required for guarding the flanks and rear of a large column and for any special work.

But given all the mounted troops required for a war, and granted that they are armed, mounted and equipped as they should be, there is still one thing wanting to enable them to be of any real use in war, *vis.*, that *in peace time they should be constantly practised with full units in the work required of them in war, over long and wide stretches of country, and without any restrictions as to where they may or may not go other than those imposed by the strategical and tactical ideas governing the operations.* It is equally important that this training should be over rough ground and that it should be systematic, continuous, and progressive, beginning at the individual man and horse and proceeding upwards, ever leading on to "the playing together" of every man and horse and arm for the common good. Only for purpose of analytical study and elementary training are there any such things as special tactics for cavalry, artillery and infantry. All higher battle training should be synthetical and depends on the self-sacrificing mutual co-operation of all arms and individuals for a common purpose. But if the nation refuses to give our army the necessary conditions of freedom of manœuvre for proper training then it must forbear criticisms on the shortcomings that must inevitably occur when brave lives are freely offered to save the nation from the consequences of its niggardly peace policy. If our army is less fitted for war than other European armies, it is largely due to the fact that it is not given the freedom of the land for the training that these latter armies have. *Any field day will show how untrained our cavalry are at present in ordinary reconnaissances and scouting work*, though this is not owing to any want of zeal in the officers and men, but solely to the want of adequate opportunities for efficient training in peace-time.

* The proportion should be increased for a small force.

† This would mean cavalry regiments of 600 men, and mounted infantry battalions of 800 men, originally to allow for the inevitable "wastage" that always takes place in war.

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BY MAJOR H. V. COX, 21ST MADRAS PIONEERS.

The German Army.

Probably one of the first thoughts in the mind of every British officer ordered to China in 1900 was that an opportunity was about to be offered him of studying at first hand part of that great machine called the German Army whose organization, methods and deeds have formed the groundwork of our military education for many years. Germany put roughly 20,000 men into North China. These were selected from 120,000 volunteers, so that one had every reason to expect to see the pick of the army.

German Cavalry.—There was one regiment about 600 strong in China. The men are too thick set and round in the leg to ride well.

They were entirely mounted on Australian horses, specially purchased and shipped to China for the purpose. The horses were not given sufficient time to recover from the voyage before they were put into full work, and consequently never looked well. The feed, *vis.*, 15 lbs. of grain and 7 lbs. of hay, was scarcely likely to get Australian horses fit or to keep them so.

The troopers carried lances, swords and carbines. The lance is hollow steel, 10 feet long and very unwieldy. The carbine is the Mauser, 1898 pattern, sighted to 1,200 yards. Forty-five rounds of ammunition is carried in a leather bandolier, and 30 rounds in the wallets.

The cloth uniforms are well made and smart, the service uniform of a kind of yellow holland, was badly cut, and quite unsuited to active service. The boots are much too long and prevent the man from walking properly. The latest pattern of cavalry saddle is too flimsy for hard work and the leather is not of the best.

The total dead weight, including arms, carried on the horse is about 8½ stone, the average weight of the trooper must be at least 11 stone, so that the horse carries very seldom under 20 stone and often more.

The Germans are not good horsemasters; their method of riding must take a lot out of a horse, and their stable management is poor.

Artillery.—The horses are smaller than ours, and were not in good condition. They were all specially purchased Australians as in the cavalry. The batteries come into and go out of action very rapidly and the fire (at manœuvre) was extremely quick. The ammunition supply was not tactically sound as all the waggons crowded together just in rear of the battery in action. The poles ride very low; there is no ammunition with the guns, 80 rounds per gun behind them.

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The total weight behind the teams is said to be 33 cwt. The gallop is slow even on level ground, and the driving wanting in accuracy as well as dash. The rate of fire claimed is 6 rounds per gun per minute.

Infantry.—The infantry composite regiments were made up from the volunteers for service in China, the men engaging to serve there for one year. Officers and men thus did not know each other, which possibly accounted for many curious occurrences.

The regiment principally referred to in this article was composed of three companies from Bavaria, and one from Wurtemberg, each company being 200 strong with four officers. The company is independent in everything. It has its own armourer, three cooks, four shoemakers, four tailors, and two bicycle orderlies—all soldiers. The Germans in China had no followers. The men were generally short but broad, deep-chested, and strong in the legs.

Their cloth uniforms were smart and well made; no soldiers could look well in their service yellow holland. They wear the Blucher boot which gives no ease over the instep, and one would think would be likely to gall the heel, though the officers say that this is not complained of.

The company laundries, cookrooms, and bath-house were excellent. The construction of the huts built for the men shewed a lamentable ignorance of what was wanted for an Eastern climate, and no doubt this accounted for a good deal of the severe sickness they suffered from!

The huts seen by the writer were very long and narrow and the men's bunks were in two rows, one above the other, as on boardship.

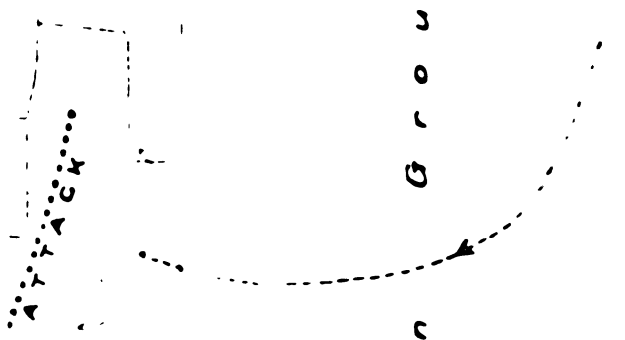
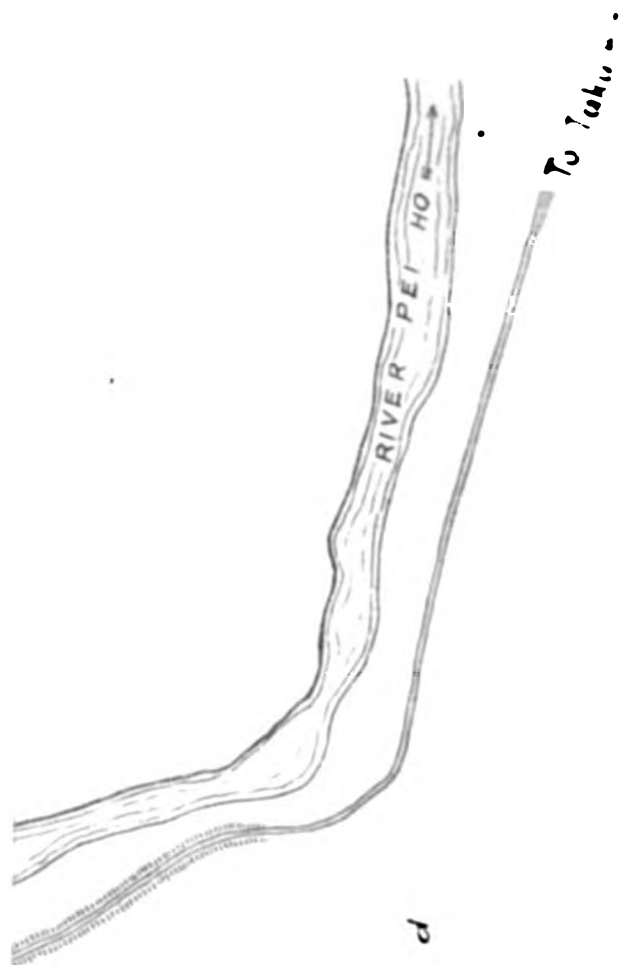
The rifle is the Mauser, 1898, sighted to 2,000 metres (2,250 yards). It has a very good sight protector.

In marching order each man carries part of a brown canvas shelter tent and a canteen. The pack, a water-bottle, a spade, a great-coat, two pouches (black leather, oiled), 45 rounds in each, or a total weight of 56 lbs.

Inside the pack are three days' biscuit rations (the biscuits are small and very good), 1 tin coffee, 1 tin vegetables, 1 tin compressed meat, a lint foot bandage, 14 inches square, which is said to be very popular, 1 pair of lace boots, 1 flannel shirt, 3 brushes, 2 pairs of socks, 1 jersey, 1 pair of drawers, a pull through and some grease. The pack is clumsy, drags on the shoulders, and is impossible in the tropics. Each bit of tente d'abris makes a rain coat, but this is too "gymmy" to be practical.

A recruit joins in October, joins his company in March of the following year, and the battalion in April or May. He is given his rifle a week after he first joins, and begins to shoot in six weeks. He fires 150 rounds a year. His pay is 15*d.* a day, doubled on service as is the pay of the officers.

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Open Ground

The battalion possessed many fine, well-developed men of physique as good or possibly better than the crack corps of the English line infantry, but considering it was a selection of one man out of six it had a surprising number of "weeds" and was far from level in physique.

The under officers and non-commissioned officers appeared to be a fine and intelligent body of men.

Great stress is laid upon exactitude of drill, precise handling of arms, matters such as the "parader schritt", and ceremonial generally. A very great part of the time available for training the men is taken up with such things and, it will be found some day, is wasted.

The officers work very hard, particularly the company officers. The German officer has a tendency to stoutness early in life, which even hard work does not prevent. It is probably due to the habit of drinking beer of a mild sort, but in large quantities.

It is now 30 years since the German Infantry engaged in serious war. Has their field training kept pace with the alteration in war since their glorious victories of 1870-71? The British Army has had a rude awakening; the Germans assuredly have theirs still to come.

The writer witnessed several tactical exercises by German Infantry and will describe one of them. (See plan attached.)

Two companies formed part of the advanced guard of an enemy advancing up the Peiho riverbank (right bank) towards Tientsin: a company, as an advanced post, covering the main road from Taku opposed the advance.

The ground in front of the position occupied by the defence was open to about 800 yards from the position, and then intersected by deep ditches affording excellent cover. The attack moved in column over the plain having only a few scouts in front.

The first extension took place at about 1,000 yards, and was only to one pace. This interval was kept to charging distance. Reserves and supports moved in close order, single rank, to about 700 yards from the position, and never extended beyond one pace. Reinforcements to the firing line moved up rapidly, but in bunches. The advance of the firing line was very rapid, and, as the weather was warm, and the men carried their packs, they were very blown, and the shooting must have suffered accordingly. The men threw themselves down at halts, and rose to advance very quickly. Cover was only taken by those men in whose way it came (it could hardly be otherwise with so small an extension), and correct alignment was evidently considered most important. Firing was independent.

This advance continued to 150 yards from the position—by rushes of about 50-80 yards at a time. Arrived there, both sides stood up and fired rapidly at each other for about two minutes. The defenders then ceased fire, and evacuated the position very deliberately. The attack doubled, equally deliberately, into the position and reformed. No attempt at an active defence was made though the embankment of

the Taku road close by afforded excellent cover, and a small party occupying it would have enfiladed all the cover used by the attack. The officers appeared perfectly satisfied with the tactics of both sides. This serene self-satisfaction is very remarkable in the German Army of to-day.

An intelligent native officer of the Indian Army was riding with the writer on this occasion. He said, "If we ever fight any one I hope they will attack us like that; we should kill them all!" The finish of the show would have suited the Military Tournament at the Agricultural Hall. The whole proceedings were 30 years old, can one say more?

German Infantry always sing on the march. It is a pity this is not more generally cultivated in our army.

But it is German discipline that has above all been held up to us as a pattern of what discipline should be.

It must have been so in 1870, there can be no doubt of that.

A close observation extending for over a year has led the writer and many of his comrades to the conclusion that the German Army, while adhering strictly to the letter of the law in this matter, as exemplified by machine-like movement, rigid ceremonial, etc., on parade, has, to a great extent, lost the spirit of true discipline, by which is here meant that which makes a soldier act as he should when away from actual supervision, behave always as the representative of a civilized race to all around him, refrain from acting the bully, and take instinctively the side of law, order, and humanity on all occasions.

The attitude of the German soldier when among the Chinese, when in contact with the officers and soldiers of other armies than their own, and the fact that they constantly disturbed the rest, and endangered the lives of those who lived near their camps by indiscriminate and causeless firing at night when on sentry duty, were some of the causes which led to the above conclusion.

The German hospitals were, according to competent authority, admirably equipped for the investigation of disease, but poorly provided with means for its cure. As summer came on the men suffered terribly from dysentery, typhoid, and typhus, as many as 450 being in hospital in Tientsin out of a total strength of 1,600 or so. The men were not compelled to wear their sun helmets (which were evidently unpopular), they used to go about in small caps till they got thirsty, drink beer, and go out again into the burning sun only to acquire another thirst, and quench it again. By evening a man under such conditions is ready for any disease. This and overcrowded small barrackrooms would account for most of it.

The German transport is large four-wheeled waggons; these are little use off a good road, and they made use of Chinese carts when moving out in the country. They had no pack transport.

The American Army.

The American cavalry ride big horses, and look after them well.

The saddle is simply a tree, and frame, with a leather seat. It has no flaps; the men fold a blanket on the horse's back, and bring the ends down between the inside of their legs and the horse's side. They use the big toe capped Mexican stirrups and ride very long, with the leg almost straight. They use a very strong bit and have no bridoon rein.

The troopers carry carbine, revolver and sword. Their tactics are far more those of mounted infantry than cavalry. For cavalry they want dash, are too calculating, and failed to grasp the one or two opportunities they had of acting mounted in North China.

All ranks wear a slouch felt hat, dark-blue jacket, and light blue breeches with white stripe, long gaiters of canvas laced up the side, and lace ankle-boots. Their cloth uniforms are not well made, and look "skimpy" in cut. In hot weather they wear khaki, similar to our own. The writer saw no American artillery in North China.

The physique of the American Infantry is good; the average height of the men greater than any other army. Their uniform is very similar to the cavalry, with no stripe on the leg.

They are armed with the Krag Jorgensen Magazine rifle, 1898 pattern; it takes five cartridges in the magazine, the shape of which is that of a tray which slips in and out under the right of the action. There is a rotatory lift from the edge of this tray, to raise the cartridge into the breech. The cut-off is very like a sporting safety bolt. The rifle is sighted up to 1,800 yards. Their sling is an excellent one, and fastened low down on both barrel and butt, so that the rifle slings comfortably. One hundred cartridges are carried in a double row in a black web belt round the waist; this is very comfortable to wear as there is no weight on the shoulders, or across the chest; the belt has an excellent buckle. An American recruit fires 300 rounds his first year, and 150 each year afterwards. The men enlist for three years, but can re-engage, and serve up to 30 years, after which they are taken care of by the State. The men's packs are made of canvas, and contain in full marching order—

One grey army blanket.

One dark-blue shirt (worn without a coat in hot weather).

One pair of drawers.

One under shirt.

Two uprights for a shelter tent are strapped on to the pack, and half a shelter tent is wrapped round the great coat on top of the pack. A fryingpan, plate and mug in tin and fitting into each other go above. The total weight is 56 lbs.

Each soldier has a "poncho," *i.e.*, a waterproof sheet with studs and clip buttons all round it, and a hole in the middle (with covering flaps) for head; it thus makes a waterproof cloak. The pack is seldom worn; never for marching in warm weather.

The American light marching order, which is generally ordered is—

One blanket rolled en banderole, with pegs and sticks for shelter inside.

The bayonet is slung on the waistbelt.

The havresack and water-bottle are exceptionally good, and are slung across the chest by the strips of broad leather with brass hooks at each end.

The men get £ 2-12-0 a month, or nearly 1s. 9d. a day in America, and 20 per cent. extra on service.

All movements and words of command are very simple and practical, the men handle their arms smartly. The salute is from the slope by bringing the disengaged hand across to the small of the butt.

The American troops were very well done in the matters of rations, cookhouses and dining rooms. Each man in China had a small camp cot.

Their commissariat system is excellent. Each company has a credit and debit account with the Commissary, and can thus draw what it likes up to its credit. This leads to a varied diet, and apparently does not produce disputes which one would have thought possible.

The stores are first rate and very cheap. Officers, as well as companies, have the privilege of purchasing stores anywhere in the world at New York prices.

The American tactics are faulty, the men "bunch" in extended order under fire, and lost heavily outside Tientsin in consequence.

The strongest and most noticeable point about the American soldier is his discipline and independence. American discipline was a brilliant example to the rest of the allies, and the individual soldier acts at once "off his own bat" and takes the side of law and order in the most prompt and practical way.

One night two soldiers (of another nation) had got into a house occupied by two civilians in Peking, and refused to leave. They evidently meant looting, and had probably been drinking. One civilian slipped away to the American guard close by and returned quickly with a corporal and two men, to find the would-be looters about to attack his friend with their bayonets. On hearing the guard coming both looters bolted. The corporal said to the civilian: "Stand aside Mr." Went down on his knee, and shot one of the robbers through both thighs!! Thomas Atkins under the same circumstances would have run himself to a standstill after them, and probably both would have got away.

The good feeling between all ranks of the American and British armies in China was most marked, and their companionship under arms and as allies is never likely to be forgotten by those who served in China in either army.

The American transport in China consisted of large four-wheeled waggons, drawn by magnificent mules about 13 hands high and often driven by a negro.

These waggons are not much used over rough country and the Americans then used Chinese carts.

The writer saw no American pack transport in the country.

The Japanese Army.

Before going into details as to the three arms of the Japanese forces in North China it may be stated broadly that their discipline was very good, their bravery undoubted, their equipment generally well suited to the country they were serving in, and their treatment of the Chinese probably better than that of any other troops. This last possibly because they understood them best, for which the following reasons would account:—

1st, their recent war with China.

2nd, the identity of the written languages.

3rd, the similarity in race.

The Japanese cavalry are the least useful part of their army; almost all the men are too short and too round in the leg to ride well. They are mounted on underbred, straight shouldered, ill-mannered ponies from 13-2 to 14-2 high. The ponies are badly broken and badly bitted. The Government has breeding farms, but purchases largely. Ponies are purchased from 3 to 4 years old, and cost an average of 200 rupees. They are shod (very badly!) on all four feet. The regulation feed is 14 lbs. of grain (half a mash of beans, and half barley) and 10 lbs. of hay.

The Japanese are bad horsemasters, and have no idea of stable management.

The troopers wear white in summer, (khaki is about to be introduced) and cloth in winter, black butcher boots and a round peaked cap. Their cloth uniforms are badly made and ill fitted. They are a bad copy of French hussar uniforms.

The men are armed with a repeating Murata carbine, which they carry slung; it is sighted to 1,500 metres (1,646 yards). It has a "cut off." A small light sword, slightly curved, is worn on a long sling belt; the sword has a useful catch in the handle to keep it in the scabbard. The scabbard is made of steel, the grip of the sword is of wood, and the handle has a small brass guard. A pouch containing 30 rounds is slung over the same shoulder as the carbine. The trooper carries three days' rations in his holsters, and two canvas saddle bags.

The total weight on the pony is about 15 stone.

The Japanese cavalry drill and tactics appear to be much the same as those of other armies; but the men know little of scouting, (their own country is not suited to it), and would certainly be of no value in "shock", though individually as brave as lions. The military authorities

would do well to turn the whole into mounted infantry, selecting carefully only light men, better shaped for riding than they generally are. They would then be very useful.

Field Artillery.—The teams (6 ponies) are drawn from the same stamp of animal the cavalry ride. They are not up to their work, and cannot move fast.

They use black breast harness, oiled, and black buckles.

There are six guns in a battery; rifled, breech-loaders, made in Japan, Krupp pattern, sighted to 3,900 metres (4,000 yards). The pole rides very low, being only 18" off the ground at rest. The total weight behind the teams is 2,000 kilos (40 cwt.). All non-commissioned officers carry a Smith and Wesson's nickel plated revolver, and a pair of French field-glasses.

Guns are kept clean, but the remainder of the equipment and carriages are allowed to more or less shift for themselves.

Uniforms are similar to the cavalry, but in dark-blue cloth without braid.

The Japanese Infantry is the backbone of the army. The Japanese is an excellent marcher, a broad and deep-chested man with stout legs. An ideal small infantry soldier. He is always cheerful, adapts himself easily to circumstances, and his wants are few and easily satisfied.

The infantry is armed with the Murata repeater rifle, 10 cartridges under the barrel; they are to be re-armed shortly with a magazine rifle by the same inventor. Their rifles are made in Japan. They are light to handle and come up well. Weight 4 kilos (8½ lbs.). The men carry 120 rounds, 90 in three pouches, 30 in the pack. The pack is similar to the French one, covered with cowskin, with the hair outwards, the greatcoat is rolled on top of the pack, and an aluminium canteen is fastened behind the pack. Inside the pack is carried the soldier's kit, and two days' dry rations; the latter consists of parched rice and dried meat wrapped in oilcloth. An emergency ration of dried fish is also carried. It is as hard as a deal board, and looks most uninviting.

The uniform (cloth) is dark-blue, with the coat cut very short, a low shoe and long holland gaiters buttoned up to the knee.

On the march to Peking (in hot weather) the pack was discarded, and a long canvas bag was worn en banderole. It contained 30 rounds, two days' dry rations, and a change of clothes.

A soldier's kit consists of—

- 2 pairs heelless socks.
- 2 flannel shirts.
- 2 flannel kummerbands.
- 2 jerseys.
- 2 handkerchiefs.
- 1 spare pair of shoes.

Total weight of the full pack is 16 kilos (35½lbs).

Sentries are only kept one hour on their posts.

Throughout the army men serve three years followed by seven in the reserve.

Conscription does not press heavily on the nation.

Nowadays the "Saumarai" are not thought to be any better fighting men than the rest of the nation, though 50 years ago they formed its soldiers entirely.

The soldier's pay is 66 cents in 10 days or about 4 shillings a month; but all kit is free, and stoppages unknown. Country wine and cigarettes are included in the ration.

The soldier's ration is 1½lbs. of bread and vegetables, or rice and ¼ lb. of meat. Tea is also supplied *ad lib.*

The infantry tactics and drill are copied from the German; hence great stress is laid on correct movement, and steady drill, also, as a consequence, extension in attack, or under fire is not nearly wide enough. The Japanese suffered severely for this on several occasions in China and would have been repulsed, or checked, once or twice had it not been for their great personal bravery, and contempt for death.

Imitation of German methods is carried to ridiculous excess. The writer saw a party of Japanese (dismounted) cavalry soldiers being made to learn the "parader schrit" (German high parade step). The little stout men in their quaint hussar uniforms and riding boots looked very comic, and it must be added the absurdity of the situation evidently struck them as much as any one else. The Japanese have a strong and saving sense of humour! The Japanese hospital equipment was as good, if not better, than any in China, thoroughly up to date, field sterilizers, and distillers, X-rays, and acetylene searchlights, etc. Their surgical instruments were of the very best, and much envied by our own medical men. The sick wear a white cotton dressing gown (padded in winter) with a Geneva cross on the left breast, and look very clean and comfortable.

Kitchens and bathrooms in hospitals and barracks were very good and clean. The bath is a passion with the Japanese and they bathe in water so hot that it would burn a European badly.

Their transport department used Chinese carts largely. They have also small two-wheeled platform carts of their own made, of wood, too light and flimsy for anything but good roads. They are drawn either by hand or a single pony.

They have also pack trains. Their pack saddlery is clumsy and only suitable for level ground.

The Japanese have imitated Western methods apparently so thoroughly that one is apt to give them credit for having completely shed their old customs and even natures—but it is not so, and the evidence that it is not often crops up so quaintly as to be quite startling.

The writer had occasion once to call on a Japanese colonel on urgent business (which directly concerned the colonel) at about 8-30 A.M. on an autumn morning. After experiencing as much difficulty in getting admission as one would expect if one wanted to interview the Emperor of Russia, he found the gallant colonel in bed in complete uniform minus boots and hat! and was informed, after stating his business, that "he was too high an officer to come out at that hour, and hoped the English officer would come again about the middle of the day!"

But in spite of occasional eccentricities the Japanese army, officers and men, will give a good account of themselves anywhere; for they are thoroughly in earnest, full of patriotism, a sturdy race, and one and all brave men. Nothing short of annihilation will stop them once they are let loose; and when they have altered their tactics they will be difficult to annihilate.

On his way home the writer, by the courtesy of the Japanese War Office, was allowed to visit the great arsenal of Osaka. The arsenal employs more than 3,000 men, all Japanese, mostly young men. Machinery and fittings are all up to date, and beautifully kept. Some of the more simple machines are now made in Japan. The writer was informed that nearly all machinery used to be purchased in England, but that it was now bought from Germany, France, and the United States. Machine tools and steel still come from England. The Japanese cannot yet make good steel, and get their big guns from England in the rough—boring, rifling and finishing them in Osaka. A good many women are employed in the arsenal, and the workshop for manufacture of the army aluminium canteen is almost entirely run by women.

The superior grades of engineers and foremen have been trained abroad principally in America. These men lecture to the young workmen on technical subjects out of work hours. No workman thinks of missing a lecture. They are evidently as terribly in earnest as the soldiers for whom they work.

NOTE.—The writer is indebted to Brigadier-General Richardson for some of the detail as to the cavalry.

FURTHER NOTES FROM THE TRANSVAAL.

BY MAJOR H. P. WALTON, SOUTH AFRICAN CONSTABULARY.

In the last notes mention was made of the effectiveness of the Boer method of firing at the charge. Another instance of the effect of such a charge has been given in the defeat of Colonel Benson's rearguard, when the gallant Colonel himself was killed.

The *Pioneer Mail* in an article written in October last says:—"The lance seems to have come into high favour again."

No doubt the lance is a very effective weapon on horseback, but how often will its use, under present conditions, be more useful than rifle fire and Boer tactics for mounted men?

Men well trained to use the rifle on horseback may defy lancers to get at them.

In fact they may well rejoice to think that the lancers might be led by dependence on their weapon to deliver themselves into their hand. The more handy sword is sufficient as a standby, when a chance offers, or when ammunition runs out.

The following graphic account of a fight with the Boers written to me by an officer commanding a Canadian company of South African Constabulary gives a vivid idea of the kind of fighting out here, and of what may be done with a rifle by mounted man. After describing the situation he writes:—"I could see at a glance what had happened, my corporal had gone out too far and got surrounded. I started at once, with 30 mounted men, sending scouts well ahead, and leaving 4 men on a strong kopje in my rear. I found the corporal, with two men, had been surrounded, all wounded, and captured. In the meantime my party in trying to reach them came in for a lively time. We were rushed by a party, about 120 strong, from three directions. I dismounted and let them have it, and actually drove them back after they had charged to within 300 yards of us, leaving 19 to all appearances dead in front of where I myself was, and many fell in other parts whom I could not see, and many hit managed to keep the saddle till they got back to the rising ground whence they had started. They then opened fire on us and a hot duel ensued for some time. After a time strong parties swept round out flanks, and after an obstinate resistance my flanks had to give way. They swarmed round and we were terribly outnumbered—15 to 1. We fought hard to hold our own, but it was quite impossible.

"Eight of my horses had by this time broken away, some of which were hit. The enemy had by now closed round us to within 300 yards; they already looked on us their prisoners. The Canadians can

ride so well that I thought some could get away, so I gave the word to mount and cut away. We dashed out through them, taking our loose horses with us, every one firing at us for all they were worth. Six ruffians singled me out, and hung on my heels, blazing at me all the time; one overtook me, then another, and I shot both dead, having a sporting carbine which I could use with one hand. A third shot my horse, and I came to the ground with a terrible crash, head first. I lay there unconscious for some time. When I recovered I found a party of Boers almost fighting over my belongings. I was hit in the thigh and in the hand. Of my party I had one killed, one died of wounds and five were wounded. Fighting went on from 7 A.M. to 12 noon. Of the Boers we saw 23 dead and more than that who were wounded."

Properly trained mounted infantry can in fact pursue just as effectively as can cavalry; they can do all that cavalry can do and a great deal more. But they cannot of course compete with the Life Guardsman in appearance. The mounted infantry do not want the great show charger of the Life Guardsman, and would not have it at a gift. Such horses would eat out a column in a week, and be utterly useless.

But mounted infantry want the best, the hardest, and the quickest horses that can be got.

The point has been constantly emphasised that mounted infantry are infantry temporarily conveyed by various vehicles to the point at which their utility commences. A cavalry officer writing to the *Pioneer* says:—"There may be two kinds of mounted infantry—temporary and permanent: by the latter is meant troops who throughout a campaign are designed to march mounted and fight on foot, who are dependent on the animals which carry them for their mobility, and their utility in the capacity in which they are present in the field."

Such nice distinctions are difficult to follow, and appear scarcely practical.

Infantry placed in vehicles can hardly be properly called mounted infantry!

There *may* be a hundred kinds of mounted infantry, if such ideas are allowed free play. Do not cavalry march mounted, and depend on the animals which carry them for their mobility?

As to the fighting on foot, except on one or two rare occasions the cavalry have had to fight on foot during this war, whenever they did fight.

A very important point which has come up during this war is the method of carrying and distributing reserve ammunition.

Every one will admit that reserve ammunition should be carried in such a way as will permit of its most rapid distribution. When men run short of ammunition they generally do so all together, on some trying occasion which has called for a common and heavy use of it. That they should be enabled to replenish at once and quickly might very easily make the difference between victory and a defeat.

The present well-known system of carrying the reserve ammunition in boxes on the pack saddle is the usual way out here.

This entails delay in off-loading, untying the boxes, opening them, diving for the ammunition packet by packet, and issuing it in packets.

The packets when received by the men have to be opened and stuck round into the bandolier, or may be put into the havresack which already contains perhaps their food and all their worldly possessions, or may be dropped or left behind.

The following is an extract from A. O. 3—460 of 9th December 1901, by the General Officer Commanding in Central South Africa :—

"It has been stated that the grooved lids of small arm ammunition boxes are often found to stick so tight that it is impossible to remove them. Officers who have experienced this or any other difficulty in opening boxes during the campaign should forward a report giving full particulars to the Principal Ordnance Officer, Army as early as possible."

There should be very little difficulty in discovering whether ammunition boxes are frequently difficult to open.

The following method is worthy of trial, although a vision of horrified ordnance authorities looking in consternation from a pile of paragraphs, rules, exceptions, agenda, corrigenda, and volumes haunts my imagination as I propound the suggestion, which is as follows :—

The best way to carry reserve ammunition is to leave it in havresacks hung on the pack saddle, or across the ordinary saddle.

The development of this idea would lead to the ammunition being carried in leather bags fashioned like havresacks, no bigger than necessary to contain 100 to 150 or even 200 rounds each. These bags to be slung on the pack saddle in rows or hooks.

In action the reserve ammunition might thus come up at a gallop, bags be unhooked and thrown around to firers.

The recipient of a bag puts the loop over his shoulder, and can put the rounds into his bandolier at his leisure.

The rounds in the bag should be loose, or in clips, but not in packets. Each horse or mule should be detailed according to his carrying capacity to carry so many rounds of reserve ammunition for so many men. There seems no reason why some such scheme should not be worked out.

Another very important thing to remember is that your horse must not stampede at any price, even if hit. If he does so you will have to fight either for a "hole in the ground" or "hands-up"; neither of which is the most inspiring thing to fight for.

General Baden-Powell recommends that one rein should be unfastened, and the rein on the other side fastened to the stirrup, so that the horse would move in a circle.

Any one can easily experiment on this method.

Another method worked out by me with the assistance of an Australian, to prevent your horse going away, whilst you may be lying on the top of a ridge, is as follows:—

The ordinary head-rope which is usually arranged fastened to the head-stall, pipeclayed and white, hanging round the horse's neck, and fastened in a knot which takes half an hour to untie, may be brought into use. This head-rope should be fastened on to the head-stall, and should have a spring catch spliced into it a little lower down at such a distance that the catch can be slipped on to the bridle ring of the bit in a second. The standing part may thus be changed from the head-collar to the bit. The other end of the rope should also be fitted with a spring catch and swivel, and the rope should, when not in use, hang direct between the head-stall and the front of the saddle to which it may be hooked on to any ring or D on the near side.

Before, or while dismounting, or after dismounting, the saddle end may be released and tied round a tree, or, failing any such thing, round the horse's fetlock; at the same time the top catch may be nipped on to the bit. No horse could shift about much when so tied. For a fairly quiet beast it would be unnecessary to put the catch on to the bit at all. The rope may be as tight or as loose as convenient, and when fixed round the fetlock would act something like a knee halter; only a knee halter does not prevent an animal from straying, whereas this method does.

Regarding saddles; about a dozen different kinds of saddles have been supplied to us, Mexican, Australian, American, Indian, English, etc. Of these the English semi-military with either wooden panels and thick felt numnah, or padded with leather instead of cloth covering to stuffing, and no numnah, are the best. The Indian saddles were undoubtedly the worst and quite unsuitable, and have been discarded.

With the wooden panels the horse rug, a blanket, is carried under the saddle, the felt numnah being hardly sufficient considering the weight to be carried and length of time under saddle. With the leather padded saddle the blanket is also carried under the saddle for marching and active service conditions.

The man carries on the horse either a greatcoat or a "Coat British warm" (the latter for choice as the greatcoat is very heavy), a patrol tin, and, in the wallet, soap, towels and food. He may also carry a blanket, if so, the blanket should be full size. Those issued are often short and will not reach from head to foot, which in cold weather is very trying.

They should have eyelet holes worked in the centre, ends and sides, and one at each corner, so that they may be used as tents. If eyelet holes are not worked holes will be torn and the blankets spoilt.

Spare horse-shoes can be carried on a pack horse or mule trolly. We never carry them; any spare carriage is utilised for ammunition which is far more necessary.

Horses should not go out shod in such a way that spare shoes will be required out with them. The nose-bag is hung on the D on the near side to counterbalance the weight of the rifle in bucket.

With light mule trolly transport the men's food and bedding can generally accompany a mounted force, otherwise it should be carried on spare horses.

Spare grain for horses should go in the mule trollies, the rest with the heavy baggage train.

The best bit for service is not the antiquated uniform Portsmouth bit and bridoon, but a bit and bridoon in one, such as the Pelham, or 9th Lancer bit.

The latter is a good one, but for a tender mouthed horse requires good hands.

In any case it is necessary to have a bit strong enough to curb a horse on parade or in the field when excited, yet light and handy and not too much of a mouthful.

If a lighter boot or foot-covering than the common and comfortable ammunition boot could be found it would be a boon. Weight carried on the foot fatigues and reduces activity far more relatively, than weight carried on other parts of the person. The ammunition boot *does* take it out of a man if he attempts to be agile up and down kopjes.

Finally it cannot be too often repeated that what is required for the men is that their officers should understand them and treat them better; there should be more personal influence and less orderly-room. There must be a true discipline fair to both the officers and the men.

Another method worked out by me with the assistance of an Australian, to prevent your horse going away, whilst you may be lying on the top of a ridge, is as follows:—

The ordinary head-rope which is usually arranged fastened to the head-stall, pipeclayed and white, hanging round the horse's neck, and fastened in a knot which takes half an hour to untie, may be brought into use. This head-rope should be fastened on to the head-stall, and should have a spring catch spliced into it a little lower down at such a distance that the catch can be slipped on to the bridle ring of the bit in a second. The standing part may thus be changed from the head-collar to the bit. The other end of the rope should also be fitted with a spring catch and swivel, and the rope should, when in use, hang direct between the head-stall and the front of the saddle to which it may be hooked on to any ring or D on the near side.

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Regarding saddles; about a dozen different kinds of saddles have been supplied to us, Mexican, Australian, American, Indian, English, etc. Of these the English semi-military with either woollen panels and thick felt numnah, or padded with leather instead of cloth, coming to studs, and no numnah, are the best. The Indian saddles were undoubtedly the worst and quite unsuitable, and have been discarded.

With the woollen panels the horse rug, or blanket, is carried under the saddle, the felt numnah being hardly sufficient to sustain the weight to be carried and length of time under saddle. With the leather padded saddle the blanket is also carried under the saddle for marching and active service conditions.

The man carries on the horse either a greatcoat or a "Great British warm" (the latter for choice as the greatcoat is very heavy), a putto tin, and, in the wallet, soap, towels and food. He may also carry a blanket, if so, the blanket should be full size. These articles are often short and will not reach from head to foot, which in cold weather is very trying.

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Finally it cannot be too often repeated that what is required for the men is that their officers should understand them and treat them better; there should be more personal influence and less orderly-room. There must be a true discipline fair to both the officers and the men.

SOME FOREIGN ARTICLES OF SPECIAL INTEREST.

EXTRACTS FROM "RAPID-FIRING ARTILLERY IN GERMANY."

BY R. RIVAS, IN THE JUNE 1901 NUMBER OF THE "MEMORIAL DE ARTILLERIA." TRANSLATED BY MAJOR T. W. G. BRYAN, R. G. A.

Those of us who follow with professional interest the efforts which are being made in every country to solve the problems connected with rapid-firing guns for field artillery must have been surprised at the indifference of Germany to the advances achieved in the latest French pattern, and in the other patterns made by private firms for export. This was doubtless because Germany came to the conclusion that the rate of fire of these designs was excessive and because a moderate rate with complete safety of the working parts was preferred to an exaggerated one which could seldom be profitable and with which (considering the class of the mechanism) such safety would not be assured.

Accordingly they only admitted "accelerated" fire in their regulations, and their present (1896) pattern gun can only fire 8 rounds a minute or, more correctly, 50 rounds a minute can be fired from a battery of six guns.

It appeared to them that this was sufficient, since if the range and laying were correct, an effective fire would disorganise the enemy whether its rate were 8, 10, or 12 rounds a minute . . . On the other hand if the laying were incorrect, the rate of fire would be of little account

The reaction has already set in. General Wille, the well-known authority on artillery, writes in the *Militär Zeitung* of the 15th December 1900:—

"The power given by the really rapid fire of certain guns need not necessarily be made use of save in special cases when sure and important results will follow, and when such are demanded such a power can only be obtained by facilitating and simplifying the working of the gun to the fullest extent. This desideratum is of the highest importance under all circumstances, even when at "slow fire." If the provision of rapid fire to meet certain conditions carried with it a useless squandering of ammunition then the introduction of repeating rifles, automatic, and machine guns would have been opposed to reason. The adversaries of hydraulic brakes are greatly diminishing in every country, both in number and importance."

The German Ehrhardt firm has taken the lead in this movement with its process for manufacturing extremely light and strong jointless steel tubes. It is no doubt a pattern of theirs made on this system which the Germans are keeping in the background, . . . the firm publish a memorandum in French in which they say : " We think that except in certain cases the bulk of the field artillery should be armed with a rapid-firing gun. Although a rate of 15 (or more) rounds a minute may be only exceptionally necessary, yet if the battery commander has the power of pouring in this intense fire at any moment it will nearly always enable him to bring the fight to a speedy conclusion. The possibility of this rapidity of fire will also give a feeling of great security to the detachments. Another advantage will be that when some of his guns are " hors de combat " (this will often happen in modern wars) he can continue the action with a fewer number—even with a single gun—under the conditions which obtain with six guns of the present pattern."

The German Committee which came to attend our last grand manœuvres (in which the new pattern gun was used) concurred with these views and in their memorandum descant in eulogistic terms on the results which may be expected from a serviceable rapid-firing gun. Thus we see that opinion is already well set towards a change of armament.

CORRESPONDENCE

TO THE SECRETARY, UNITED SERVICE INSTITUTION OF INDIA.

Gilgit, Kashmir, 17th March 1902.

SIR,

I should like to suggest through the Journal of the United Service Institution of India, that officers and non-commissioned officers be provided with a horn for ceasing fire and that the whistles be given to scouts, who should not use them except in cases of necessity to attract the attention of other scouts or to warn of danger any body of troops they may be covering.

I have, etc.,

F. WYNCH, *Captain,*
37th Dogra Infantry.

ARMY, UNIVERSITY AND OTHER EXAMINATIONS.—

A Mr. J. L. WATSON, M. A. Oxon., late Scholar of Brasenose, First Class Honours (formerly of Richmond House, Worthing), receives four or five pupils for the above. Recent successes include Cooper's Hill Admission; Direct Commission in the Royal Artillery (Militia Candidate); R. M. C. Sandhurst; Cambridge General for degree. Terms moderate. Address, Middleton House, Bognor, Sussex.

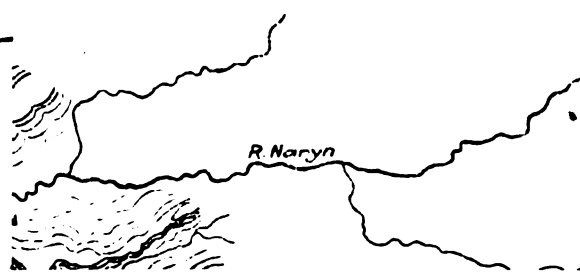
J—P

Prize Essay Gold Medallists.

- 1872.....ROBERTS, Lieut.-Col. F. S., V.C., C.B., R.A.
 1873.....COLQUHOUN, Capt. J. A. S., R.A.
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- 1889.....BELL, Col. M. S., V.C., R.E. (specially awarded a
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 1901.....BURTON, Maj. E. B., S. C.
 SANDER SINGH, Col. Havildar, 31st Burma Infantry.
 1902.....KAY, CAPTAN M., R.E., 7th Rajput Infantry.
 FILDER BRANDAGE HAVILDAR, 9th Gurkha Rifles.

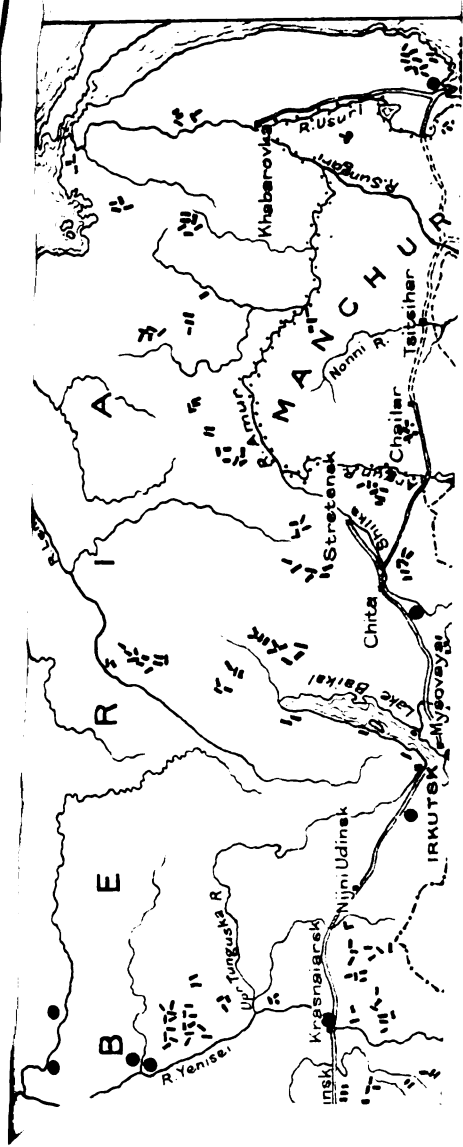


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MacGregor Memorial Silver Medallists.

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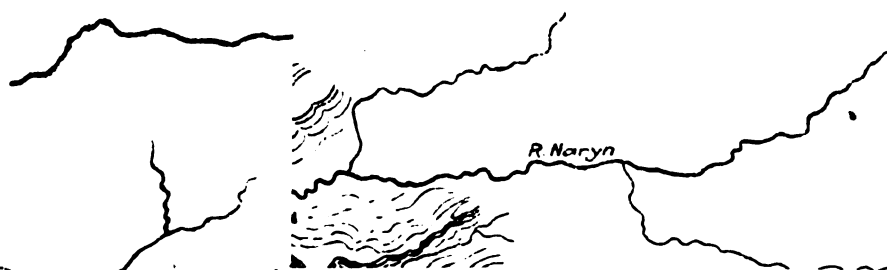
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OF THE

United Service Institution of India.

VOL. XXXI.

OCTOBER 1902.

NO. 149.

A WINTER TRIP THROUGH CENTRAL ASIA AND SIBERIA.

LECTURE BY MAJOR E. J. MEDLEY, 17th Bengal Lancers.

Thursday, 10th July 1902.

MAJOR-GENERAL SIR E. ELLES, K.C.B., IN THE CHAIR.

It is many years now since Central Asia and Siberia began to have a peculiar fascination for me, but I had seen little hope of ever being able to visit those parts. In 1895, however, Fate sent me to serve on the Northern Frontier of India, in the Gilgit Agency.

Here, in the midst of the mighty mountains of the Himalayas, I passed five years of my life. During these years I have seen daily from the windows of my house in Gilgit, three peaks of over 24,000 feet in height, while within a radius of 20 miles round Gilgit, unseen but felt, there are said to be 60 peaks of over 20,000 feet in height. Even such magnificent surroundings pall on one after a time, however, and I began to long for the plains and for civilization once more. Looking at the map of Asia, it seemed to me that, as I was already nearly half way across this great continent, I might as well make my way to Europe by travelling northwards instead of southwards; more especially as I was already well acquainted with India and the sea route *via* Bombay, while I had no personal knowledge of the Steppes of Central Asia and the Great Siberian Railway.

After some delay and difficulty my desire was realised, and permission was accorded me to proceed on leave to Europe *via* Central Asia and Siberia.

Accordingly I left Gilgit on 5th October 1900, and proceeded up the Hunza valley. For the first 70 miles as far as Baltit, the capital of the little State of Hunza, there is now a very fair pack road, but from that on to the frontier the road has been well described as the "worst in the world". Nature has so arranged matters that when

the passes at the head of the valley are closed by snow, the valley itself is open, and *vice versâ*. The road is therefore really only open for pony traffic for about two months in the year in the late autumn.

I was, however, starting somewhat earlier than the best time, as I wished to avoid having to travel by sledge in the coldest month of the year, January, and also had a vague hope that I might be in time to participate in the then coming winter campaign of the Russians in Manchuria.

There was something peculiar in starting on a journey of 2,000 miles to catch a train, as I was doing, and as the latest information I could obtain in India before I left was to the effect that the through Siberian trains ran only once a month, I felt that chance would have a good deal to say in the matter.

However, thirty stalwart men of Hunza have shouldered my various packages at Biltit, and we are off for the Far North. I have brought a pony with me, but I feel that in places a cat would be a better mount, and my pony can only negotiate the bad bits with the assistance and support of four men of the country, who hold tight to his head and tail to prevent him from falling off the ledge of a road into the torrent some thousand feet below. The weather is perfect, and when one can ride, one has no desire for anything further in this life; but when, as sometimes happens, the pony has to be unsaddled in order to be taken through the raging and ice-cold river, while we have to swarm up the solid face of a jutting-out cliff for a thousand feet or so, and the faithful Hunza men haul us up in front, or push us up from behind, why, then, one begins to feel that a fur coat is somewhat of an encumbrance, and you wish yourself anywhere but where you are at the moment. This upper part of the valley, through which we are now crawling, is usually known as the Gujhal valley to distinguish it from the Hunza valley proper.

The scenery is rugged in the extreme. The valley is seldom more than 100 yards wide, and the solid rock cliffs rise sheer up on either hand for some thousands of feet, ending generally in sharp pointed pinnacles, which look for all the world like the Gothic towers of some vast cathedral. For the most part the valley is void of vegetation, but now and then, far up the mountain side, may be seen a few pines or cedars, which serve the villagers as fuel. Later on in the year, as I knew from previous visits, the cold in the higher part of the valley is intense. The river is then frozen solid, snow lies deep on the ground, and all life seems to come to a standstill. Just now, however, at the time of my journey, the valley is at its best. It is neither too warm by day nor too cold at night, and when I reach the village of Misgar, 12,000 feet high, and the last inhabited spot of the British Indian possessions, and feel that the most difficult bit on this road has been safely negotiated, I cannot help agreeing with my servants and my transport men that "my luck is good". At Misgar I meet a party of pilgrims from Central Asia on their way to far off Mekha *viâ* India, to perform the "Haj" or Mahomedan pilgrimage. Like all travellers, they had been detained here by the Picket which keeps watch and ward at this outpost on behalf of the great White Emperor, till his representative is

Gilgit should accord permission for them to proceed. As the general permission for pilgrims to use this route had been granted before I left Gilgit, I was able to do these worthy people a good turn, and when we parted the next morning, I for the snows of Siberia, and they for the sands of Arabia, they showered blessings on me and my party, which is accounted among Mahomedans the best "God speed" a traveller can have.

We crossed the Mustagh Range by the Kilik pass, 15,800 feet high, on the 16th of October. A recent fall of early snow made the crossing somewhat tedious for the coolies, but they were all happily brought into camp late that night by torchlight. From the top of the pass, I got my first view of the Pamirs, than which I can imagine nothing more striking. After the narrow valley of Gujhal, where one feels oneself shut in on all sides by those lofty mountains, you suddenly come out on to the tops of the mountains as it were, and begin to realise why it has been so aptly called "the roof of the world." At the foot of the pass, looking north, lay the valley of the Karachkur stream, down which my road was to lie for some days. Beyond this valley lay waves upon waves of mountains, not rugged and pinnacled like those through which I had just passed, and in the midst of which I had lived for the last five years, but smooth and round, and very little higher than the valley they flanked. While the Kilik pass and the Mustagh range were covered with snow, the mountains on the Pamirs were almost green, and not a particle of snow was to be seen on them anywhere. On my left, distant not more than some 8 miles, was plainly visible the Wakhajrui pass, where China, Britain and Afghanistan meet, and on the west side of which rises the Oxus river.

We descended the Kilik, and on reaching the stream of the Karachkur, which comes from the east side of the Wakhajrui pass, we turned due east, and continued down the valley for some four miles, till we reached the first signs of Chinese authority in these parts, in the shape of the Tajik picket of Balderling. Here we were most kindly received and most hospitably entertained by these denizens of the Pamirs. Seated round the usual and indeed only possible form of fire on the Pamirs, *viz.*, one made of dung and *burtisa* (a thick, stunted shrub), inside a large felt tent or Kibitka, the walls and floor of which were covered with rich Yarkand carpets, sipping tea, and nibbling at rolls, served up all hot by the ladies of the house, I felt that even the best European hotels could not at that particular moment have afforded us greater luxuries or more appreciated comfort. While our hosts are killing and boiling the sheep with which, as is the custom in this hospitable region, every honoured guest is regaled, a few words may not be out of place regarding the Taghdumbash Pamir on which I now found myself. The valley is about 90 miles in length, stretching from the Wakhajrui pass to the village of Tashkurghan. For the first half of its course it runs due east; and then turns north near the Raskem mountains.

The inhabitants of the Taghdumbash Pamir are Tajiks. These people are the original Iranian inhabitants of Central Asia, and much superior to the Kirghiz, on whom they look with great con-

tempt. The Chinese authorities use them as pickets to watch the valleys leading down from the passes on the Sarikol range, which forms the boundary between China and Russia in this part of the world. They happen to be so stationed as to form convenient halting places for the traveller, and as a felt tent is both more commodious and warmer than an ordinary tent, most travellers are only too pleased to avail themselves of the hospitality and comfort so readily proffered by the pickets.

To resume my journey. After dismissing my Hunza porters, and arranging for the conveyance of my baggage to Tashkurghan on camels, we started down the valley, and arrived at Tashkurghan, the capital of the district, and the seat of residence of a Chinese Amban or "district magistrate," on the 20th of October. Here we were warmly welcomed by the British Indian News-writer who looks after our interests in these parts. Although, for politeness sake, I sent word of my arrival to the Amban, and expressed a desire to see him, I never succeeded in doing so during my two days' halt there; the reason being that he was too busily engaged in gambling with his own private soldiers to have time to attend to business. The Chinese officials at these distant outposts in fact do little else but gamble, the work being done by the Kirghiz Begs in the name of the Ambans. The system seems to suit all parties, for I never heard of any cases of oppression or discontent among these Mahomedan subjects of China.

From Tashkurghan to Kashgar there are several roads. I chose the one by the Gez defile, as it is the usual winter road, and one can ride the whole way. For the first few miles we continued down the Karachkur river, which we had followed for so many days. This river then turned east to Yarkand, while we continued north up the valley of the Kara-su. At ten miles from Tashkurghan we entered the large plain, some 50 miles square, of Tigharma, where in summer the Kirghiz bring their flocks and herds in thousands to graze. Crossing the Kara-su pass, we descend on to a wind swept plain; then on, past the giant mountains of Mustagh Ata and Kungur, concerning the duality of which controversy raged so long, and over the ascent of one of which Sven Hedin recently spent so much time in vain. Leaving little Kara Kul on the right, where the wind blows so strongly all the year round that the lake never freezes over, we reach the fort and lake of Bulun Kul, and turning eastwards enter the Gez defile. For three days we wind our way along the river bed, between lofty precipitous rocks, through which the road is closed in summer on account of the volume of water and emerge from the mountains at length at the village and Fort of Tashmalyk, on to a stony, sandy plain, across which the road lies for the last 35 miles, to Kashgar, the last 25 through villages and cultivation, till we reach late at night on the 30th of October the hospitable dwelling of the British representative, Mr. Macartney, who with his charming wife lives in an anglicised Chinese house just outside the walls of the Mahomedan city of Kashgar. Here I was detained 17 days, during which I made the acquaintance of the large Russian Colony, visited the small colony of Swedish missionaries, and that eccentric but extremely clever

Dutch Missionary, Father Hendrics. I also called on the Chinese officials and had the honor of being invited to dinner with the Tao-Tai, or Vice-Governor of the Division of Kashgar. There is no need for me to describe a Chinese dinner; it has already been fully written about more than once in recent books of travel; suffice it to say here that the particular dinner at which I had the honour to be present was on the usual pattern; it began with shark's fins, included sea-weed and that great delicacy, suckling pig and crackling, besides some forty other courses, and ended up with the every-day Chinese dish of boiled rice, which notifies that the host has done all he can for you, and it is time for the guests to depart.

From Kashgar I sent my servants back to Gilgit, and started with two Cossack orderlies, kindly lent me by the Russian Consul General in company with the monthly Russian post, on the 16th November for Naryn.

We followed a large river bed the whole way up to the pass of Turug Art, by which we crossed the main Tian Shan range from China into Russia. Then, skirting along the southern shore of the Chatir Kul, we crossed the second range of the Tian Shan by the low depression in it which is not marked on any map, but is known locally as the Chatir Kul pass.

At-Bashi was reached on the 23rd November. Here resides the Russian "sub-district officer," in charge of the Kirghiz of these parts; his sway extends over 50,000 square miles of territory, peopled by a nomad population. Hiring the only droshky or cab the village contained, I drove the remaining 25 miles into Naryn. The road was deep in snow, and we had to cross a 10,000 foot pass *en route*, but the little Kirghiz ponies did the stage in 3 hours without a change.

As I drew up that evening at the post house, a Russian officer appeared at the door, greeted me warmly and invited me in to supper. This turned out to be my escort, who had been waiting here ten days for me.

At Naryn I parted with my Cossacks, but before doing so it may not be uninteresting to you if I say a few words about these wardens of the Tsar's Asiatic marches.

The Central Asian Cossacks know nothing of Europe; they have always moved forward with the frontier of the Empire, and are now practically Asiaticised Europeans. They talk Turki as fluently as Russian, and are quite at home among the Kirghiz, from whom, but for the rifle on the Cossack's back, it would often be hard to tell them. General Ionof, the Governor of Semirechia, told me he preferred the Cossacks as colonists to the Russian peasant.

When the Cossack joins his regiment for his term of service, he brings with him to this day his own horse and saddle, for they are what he uses daily in his own village, and if either of them go wrong, he can replace them with ease in any part of Asia at a moment's notice.

For the Cossack supply and transport difficulties are non-existent. A native follower, he has never seen or dreamt of. Consequently a Cossack can, at five minutes' notice, march to the other end of Nowhere.

For instance, while I was in Kashgar, an order came from Tashkent that the Tsar had given Dr. Sven Hedin permission to have two Cossack orderlies sent to him. No one knew exactly where Sven Hedin was just then, but he had been heard of some six months previously from the neighbourhood of Lob-nor. Within 24 hours of the receipt of the order the two Cossacks started off on a march of about a thousand miles into the heart of China to find Sven Hedin, and find him they did, as he told me himself the other day, when in India. Again, my march of ten days from Kashgar to Naryn lay through a country absolutely bare of all supplies but grass and sheep. The Cossacks with me had no transport, but each man carried on his troop horse eight days' grain for his animal, and a week's bread for himself, besides his own and his horse's blankets, and a change of linen.

We left Naryn on 26th November by tarantass, on our long posting journey of 1,400 miles.

While we jolt along the road at the regulation pace of six miles an hour, let me try and describe to you the pleasures of long distance stage travelling in Russian Asia. After the incessant daily riding over every imaginable sort of road, by which I had accomplished the first six hundred miles of my journey, the pleasure of sitting at ease in a carriage, springless though it was, well muffled up in furs, revelling in the bright sunshine, and breathing in the crisp frosty morning air, can be better imagined than described; and this first stage of the long drive through Asia will remain in my memory as one of the most delightful experiences of my life.

So rapidly are railways springing up all over Asia that very soon these long posting journeys will be as much things of the past as stage coaching is now in the British Isles.

The roads in Asia are not metalled, consequently the going, as long as one is on wheels, is somewhat rough. As soon as the snow falls, however, and sledges can be used, the journey becomes delightful. At about every 18 miles along the road there are very good rest-houses at which a *samovar* of boiling water and bread are procurable, but meat dishes, fowls and eggs can only be obtained where there are villages. Of the latter, however, there are many along the route, and as good tinned provisions can be got at all the towns, no very great forethought is necessary as regards supplies.

The rest-houses are let out on contract, generally to old soldiers, the contractors maintaining horses and vehicles for travellers who pay the hire for the same at each stage at fixed rates.

It is usual to post night and day, until stopped by want of horses. With a road 2,000 miles in length, and side roads cutting into it, it would be obviously impossible to regulate the number of vehicles to start from any given point each day, as is done, for instance, at Simla and Kalka. This matter is therefore left to chance. One is but seldom detained however. During my journey of 1,400 miles, with its 80 stages, and, excluding voluntary halts, taking 22 days to do, I was only detained four times for want of horses, and then only for a few hours at a time.

Each stage is done in some three hours, which in the winter, is about as much as a traveller can stand, without injury from the cold. Should the driver lose his way in a snow storm, as happened to me three times, and one is kept out between stages for some five or six hours, the traveller will probably get frost bitten. This will depend on the severity of the cold. We were, however, fortunate enough to experience no cold severer than 54 degrees of frost (Fahrenheit) till we reached the railway.

The Yemshchiks or drivers are chiefly Kirghiz, and no better drivers could be wished for on the wild, barren steppes. When the whole country is as flat as the palm of one's hand, and covered so deep in snow that no landmark of any sort or kind is visible, on a pitch dark night, with a biting wind hurling the falling snow straight in his face; with the telegraph posts invisible at even a few paces' distance, and yet the only mark of any sort or kind in the awful wilderness to give the general direction, I doubt if any human being in the world, except a Kirghiz, born and bred on these steppes, could find his way to the next station.

For 180 miles after leaving Naryn, the road wound in and out among the mountains. At one point we left the postal road, and took a short cut.

This necessitated our hiring vehicles and horses at a Russian village, by means of which we crossed the Kastek pass (12,000 feet high) and deep in snow. We did 60 odd miles that day, all with the one set of ponies. It shortened our journey by some two hundred miles, and at the same time gave one an idea of what the hardy Russian peasant and his game little ponies can perform at a pinch. For about 2 miles on each side of the top of the pass we had to get over solid ice, for the stream had run down the road and frozen there. We sat in the tarantass, sometimes with our feet above our heads, while the peasants and the ponies got the vehicle up the ice track.

We emerged from the mountains shortly before reaching the town of Vierny.

Vierny, as has been well said, was unknown in Europe until it ceased to exist. It was destroyed by an earthquake not many years ago. Since then it has been rebuilt, but almost entirely of wood. The town now numbers some 24,000 inhabitants, more than two-thirds of whom are pure Russians. It is the capital of the province of Semirechia, which has lately been incorporated in the Government of Turkestan.

During the few days I spent here I went round the barracks of one of the Infantry regiments, and was much struck with the comfort and cleanliness of everything. One point in particular that I noted was the entire absence of natives near the barracks, and on inquiry I found that such a thing as a native servant was unheard of. The men, in fact, do everything for themselves, just as in Europe. The kitchens, one per company, were as beautifully kept and found as in any good hotel in London, and the soldiers themselves not only buy and cook their food, but also bake their own bread. The Russian officers too all have soldier servants.

Is it too much to hope that our army in India may some day be able to do without its horde of camp-followers?

We left Vierny on the 7th December by tarantass, but soon met with the snow, and for the rest of the journey travelled on sledges. The comfort of the change is more than words can express, and as we lay back on our rugs and pillows, reading or chatting as the fancy suited us, while the sledge spun along smoothly over the crisp hard snow, we felt that life had not yet exhausted all its pleasures.

Travelling without stoppage except for meals, and to change horses and sledges, we reached Kopal on the 10th, Sergiopol on the 14th, and Semipalatinsk on the 16th December. Here we halted for three days to give ourselves and our clothes a much needed wash.

In the summer the best way to go from here to the railway is by steamer down the river Irtysh. When we were there, this pleasant mode of travel was denied to us, as the river was locked in the icy grip of winter. The post goes along the road, down the right bank of the river to Omsk. This road is not particularly interesting at any time, so we decided to take the road by Barnaul, which looked as if it must get us to the railway somewhere, though exactly where we could not find out. The good people of Semipalatinsk have been so long cut off from the outside world that though the Siberian railway had been open for five years, they hardly seemed to be aware of its existence.

At any rate, to our enquiries about trains, etc., they politely responded "I don't know," and seemed much astonished that we should expect them to know. In fact, when I remonstrated with them on their ignorance about a railway which was so close to them, they simply stared and said "Close! why it is 450 miles away." "Oh, that is nothing," I replied; "I have come 1,500 miles to catch the train, so it seems close now to me."

Accordingly, when we left Semipalatinsk on the 19th December, on the last stage of our long posting journey, we were in pleasing ignorance as to where exactly we should strike the rail, but hoped to get some definite information on the point before long.

The country through which we were now going was quite different to anything we had seen before. Instead of the valleys and mountains of the Tian Shan, or the level steppes of Central Asia, we now found a pleasing mixture of both, on a small scale. Where before we had never seen a tree, except high up on the mountain side, or in an artificial grove, where they were being carefully nursed by the Russian Forest Officers, here we began to go through the outskirts of those enormous Siberian forests, which later on we were to see for days together from the railway carriage. In place of the wandering Kirghiz of the steppes, with small Russian colonies sandwiched in between their camps at long intervals, looking as if they had only just arrived from Europe, and not quite certain whether they liked the change, we now found at every station a large and flourishing colony, 200 and more years old, all peopled by pure Russians, with never a native of Asia to be seen anywhere. And yet somehow these Russian villages were unlike those in Europe. Here we found

broad streets, lighted with oil lamps ; our old friends the village church and bath house were there certainly, but there were also schools, and the public house didn't seem to occupy so large a space as in European Russia. Also these houses were trim and neat, and when we went inside, instead of the two dirty dark rooms, with the whole family asleep on the stove, we found pretty little furnished and clean rooms, that would do credit to any well-to-do farmer in Great Britain. The truth is that the Russian peasant in Siberia has been for so many years quite cut off from all Government assistance that he has had to work out his own salvation, and well has he risen to the occasion ; so that now, when he is at length being discovered by the curious traveller from the outside world, he appears to belong almost to a different race from the ordinary Russian Moujik.

The 22nd December sees us at Barnaul, famous for possessing one of the finest mineral museums in the world, where some small idea of the latent riches of the Altai mountains can be obtained. Its population is 30,000, all Russians.

At Barnaul we came upon the first traces of the railway in the shape of a time table hanging on the wall in the rest house. Our excitement was great ; we were now only 150 miles from the rail, and hoped in 24 hours to be in a train. Barnaul, however, had discovered the railway in order to make use of it, and we were delayed at every yard of the road by long lines of sledges, packed with frozen carcasses of animals, destined for the Tomsk and Irkutsk markets. At length we reached the last postal station at which we were to change horses, and from there drove straight down the frozen river Ob, 3 miles in width, through the new town of Novo-nikolayevsk, barely two years old, but already numbering more than 15 000 inhabitants, and finally drew up at the large handsome station of Ob, on the right bank of the river of that name.

Having at length reached the railway, and as you are probably as tired of my journey as I was myself, I propose to break it off here and to give you a slight general description of Siberia and the Great Siberian Railway.

Time will not permit of my giving you anything more than the roughest outline of Siberia and the Great Siberian Railway, and I would not venture to do even that but for the extraordinary ignorance that exists among even well-educated English people with regard to almost everything connected with Siberia.

Political Siberia, which also corresponds very fairly with physical Siberia, is about 5 million square miles in extent, and lies between 45 and 77 degrees of North latitude, and between 30 and 160 East longitude. Its land surface is about one-thirteenth of the land surface of the whole Earth, or about 3 times the size of the Indian Empire.

With such a vast extent of country it can easily be imagined that there is great variety not only of surface and geological structure, but also of climate, fauna and flora.

Time does not permit of my doing more than indicate in the briefest way possible the general characteristics of these variations. Roughly speaking, it may be said that the country divides itself into

three zones. The first or Southern zone is what we may call the agricultural zone in West Siberia, and the mineral zone in East Siberia. Then comes the middle or forest zone; and lastly, the zone of the tundras, where the Earth, at a depth of one foot below the surface, remains always frozen. Next, considering the configuration of the country from west to east, we find that West Siberia consists almost entirely of plain, which for more than 1,000 miles stretches eastwards with but an occasional hill of some 500 feet in height to break the monotony. Very different is it in Central Siberia. Here we have long stretches of hills, rising sometimes even to mountains, and interspersed with thick forests, stretching for many hundreds of miles, the whole ending finally with the thickly wooded mountains round Lake Baikal, which attain an altitude of some 6,000 feet. Trans Baikal the country is entirely mountainous, and this characteristic prevails almost right up to the Pacific Ocean.

Now, a few words with regard to the climate. We have all heard of the severity of the Siberian winter, and if we consider merely the lowness of the thermometer, I am free to confess that report is correct. In December and January, the coldest months, the mean temperature of the Trans-Baikal region is about 33° C. (or 91° of frost Fahrenheit). The day I spent at Stretensk it was 52° C., or 125° of frost Fahrenheit. This is equal to the severest cold experienced by the Duc d'Abuzzi on his Polar expedition.

Owing, however, to the absence of winds, this cold is easily endured, while the bright sunny days and clear dry atmosphere make it an ideal climate for consumptives.

In summer the heat is great, the mean Trans-Baikal temperature being about 80° F., while for days together the thermometer will frequently rise to over 100° F.

With these few words of description of the country, I will now pass on to the railway, which has, it may almost be said, been the means of introducing this vast country to the great majority of us.

The first stone of the great Siberian Railway was laid by the present Tzar of Russia on the 31st of May 1891 at Vladivostok, when he was returning to Russia across Siberia after his trip to the East. The line was divided for purposes of construction into several sections, but certain of them being recognised as more important than the others, were constructed first. These were the West Siberian section from Cheliabinsk to Ob; the Central Siberian from Ob to Irkutsk; and the Ussuri section from Vladivostok to Khabarovsk.

In the second rank comes the Trans-Baikal section from Mysovaya to Stretensk.

Finally, the remaining sections "round the Baikal Lake" and the "Amur river," being the most difficult, were left to the last.

Up to the present time all have been completed but the last two sections.

Since the original project for the line was conceived, more detailed surveys have shown the enormous difficulties that will have to be overcome in making these last two sections. When these became

known to the Committee charged with the construction of the railway, they set about devising other means whereby through communication from Europe to the Pacific Ocean might be established.

As regards the Baikal Lake section, it was proposed to carry the through trains bodily across the Lake on steamers, which should in winter cut their way through the ice. Two such steamers have been built, one to carry a train of 15 cars, and the other for passengers only. The first winter, owing to the bad situation of Mysovaya harbour, whereby the ice freezes solid in the harbour, the large steamer broke its shaft in cutting its way out, and through communication was interrupted for two months. This last winter, however, a new harbour was opened in a better position, and communication was maintained through the winter. The "circum-Baikal" line has therefore been postponed for the present till money is available. It will take both time and money as the line has to be cut out of solid rock almost the whole way.

Finally, as regards the "Amur river section." By a treaty with China, Russia was permitted to make a line through Manchuria direct to Vladivostok, with a branch to Port Arthur, taking off at Harbin Junction. A glance at the map will show that this is the shortest and most direct route that any line could possibly take from Europe to the Far East. It was hoped that direct through traffic from Europe to the Pacific Ocean would have been established before the close of last century. Owing, however, to the wrecking of the Manchurian section by the Boxers, that section had to be relaid almost throughout. Most of it is now completed, and there is every possibility that next spring our visitors returning to Europe after the Delhi Proclamation Assemblage will be able to complete a round tour by rail through from Port Arthur to Paris.

The Manchurian line takes off at a place called "Kitaiski Razyezd," "Change for China," which is 70 miles east of the town of Chita.

The Amur river line, there is little doubt, will be built at some no distant date, though it will not be used as the through line. The whole of the Amur region is full of gold, which may be said at present to be almost untouched. Similarly, the other goldbearing parts of the country are equally awaiting railway communications before they can be properly worked with large and modern machinery.

The distances along the Siberian Railway are as follows :—

Cheliabinsk—Ob	...	...	887 miles.
Ob—Irkutsk	...	...	1,145 miles.
Irkutsk—Baikal	...	...	40 miles.
Across Lake Baikal	...	...	60 miles.
Mysovaya—Change for China	...	...	520 miles.
Change for China—Vladivostok	...	...	1,180 miles (<i>via</i> Manchuria).
			<hr/>
			2,110 miles (<i>via</i> Amur).
			<hr/>

the passes at the head of the valley are closed by snow, the valley itself is open, and *vice versa*. The road is therefore really only open for pony traffic for about two months in the year in the late autumn.

I was, however, starting somewhat earlier than the best time, as I wished to avoid having to travel by sledge in the coldest month of the year, January, and also had a vague hope that I might be in time to participate in the then coming winter campaign of the Russians in Manchuria.

There was something peculiar in starting on a journey of 2000 miles to catch a train, as I was doing, and as the latest information I could obtain in India before I left was to the effect that the through Siberian trains ran only once a month, I felt that chance would have a good deal to say in the matter.

However, thirty stalwart men of Hunza have shouldered my various packages at Baltit, and we are off for the Far North. I have brought a pony with me, but I feel that in places a cat would be a better mount, and my pony can only negotiate the bad bits with the assistance and support of four men of the country, who hold tight to his head and tail to prevent him from falling off the ledge of a road into the torrent some thousand feet below. The weather is perfect, and when one can ride, one has no desire for anything further in this life; but when, as sometimes happens, the pony has to be unsaddled in order to be taken through the raging and freezing river, while we have to swarm up the solid face of a jutting-out cliff for a thousand feet or so, and the faithful Hunza men haul us up in front, or push us up from behind, why, then, one begins to feel that a fur coat is somewhat of an encumbrance, and you wish yourself anywhere but where you are at the moment. This upper part of the valley, through which we are now crawling, is usually known as the Gujhal valley to distinguish it from the Hunza valley proper.

The scenery is rugged in the extreme. The valley is seldom more than 100 yards wide, and the solid rock cliffs rise sheer up on either hand for some thousands of feet, ending generally in sharp pointed pinnacles, which look for all the world like the Gable towers of some vast cathedral. For the most part the valley is void of vegetation, but now and then, far up the mountain side, may be seen a few pines or cedars, which serve the villagers as fuel. Later on in the year, as I know from previous visits, the cold in the higher part of the valley is intense. The river is then frozen solid, snow lies deep on the ground, and all life seems to come to a standstill. Just now, however, at the time of my journey, the valley is at its best. It is neither too warm by day nor too cold at night, and when I reach the village of Misgar, 12,000 feet high, and the last inhabited spot of the British Indian possessions, and feel that the most difficult bit on this road has been safely negotiated, I cannot help agreeing with my servants and my transport men that my luck is good. At Misgar I meet a party of pilgrims from Central Asia on their way to sacred Mekka in India, to perform the *Hajj* or Mahomedan pilgrimage. Like all travellers, they had been detained here by the Picket which keeps watch and ward at this outpost on behalf of the great White Emperor, and his representative is

Gilgit should accord permission for them to proceed. As the general permission for pilgrims to use this route had been granted before I left Gilgit, I was able to do these worthy people a good turn, and when we parted the next morning, I for the snows of Siberia, and they for the sands of Arabia, they showered blessings on me and my party, which is accounted among Mahomedans the best "God speed" a traveller can have.

We crossed the Mustagh Range by the Kilik pass, 15,800 feet high, on the 16th of October. A recent fall of early snow made the crossing somewhat tedious for the coolies, but they were all happily brought into camp late that night by torchlight. From the top of the pass, I got my first view of the Pamirs, than which I can imagine nothing more striking. After the narrow valley of Gujhal, where one feels oneself shut in on all sides by those lofty mountains, you suddenly come out on to the tops of the mountains as it were, and begin to realise why it has been so aptly called "the roof of the world." At the foot of the pass, looking north, lay the valley of the Karachkur stream, down which my road was to lie for some days. Beyond this valley lay waves upon waves of mountains, not rugged and pinnacled like those through which I had just passed, and in the midst of which I had lived for the last five years, but smooth and round, and very little higher than the valley they flanked. While the Kilik pass and the Mustagh range were covered with snow, the mountains on the Pamirs were almost green, and not a particle of snow was to be seen on them anywhere. On my left, distant not more than some 8 miles, was plainly visible the Wakhajrui pass, where China, Britain and Afghanistan meet, and on the west side of which rises the Oxus river.

We descended the Kilik, and on reaching the stream of the Karachkur, which comes from the east side of the Wakhajrui pass, we turned due east, and continued down the valley for some four miles, till we reached the first signs of Chinese authority in these parts, in the shape of the Tajik picket of Balderling. Here we were most kindly received and most hospitably entertained by these denizens of the Pamirs. Seated round the usual and indeed only possible form of fire on the Pamirs, *viz.*, one made of dung and *burtza* (a thick, stunted shrub), inside a large felt tent or Kibitka, the walls and floor of which were covered with rich Yarkand carpets, sipping tea, and nibbling at rolls, served up all hot by the ladies of the house, I felt that even the best European hotels could not at that particular moment have afforded us greater luxuries or more appreciated comfort. While our hosts are killing and boiling the sheep with which, as is the custom in this hospitable region, every honoured guest is regaled, a few words may not be out of place regarding the Taghdumbash Pamir on which I now found myself. The valley is about 90 miles in length, stretching from the Wakhajrui pass to the village of Tashkurghan. For the first half of its course it runs due east; and then turns north near the Raskem mountains.

The inhabitants of the Taghdumbash Pamir are Tajiks. These people are the original Iranian inhabitants of Central Asia, and much superior to the Kirghiz, on whom they look with great con-

tempt. The Chinese authorities use them as pickets to watch the valleys leading down from the passes on the Sarikol range, which forms the boundary between China and Russia in this part of the world. They happen to be so stationed as to form convenient halting places for the traveller, and as a felt tent is both more commodious and warmer than an ordinary tent, most travellers are only too pleased to avail themselves of the hospitality and comfort so readily proffered by the pickets.

To resume my journey. After dismissing my Hunza porters, and arranging for the conveyance of my baggage to Tashkurghan on camels, we started down the valley, and arrived at Tashkurghan, the capital of the district, and the seat of residence of a Chinese Amban or "district magistrate," on the 20th of October. Here we were warmly welcomed by the British Indian News-writer who looks after our interests in these parts. Although, for politeness sake, I sent word of my arrival to the Amban, and expressed a desire to see him, I never succeeded in doing so during my two days' stay there; the reason being that he was too busily engaged in gambling with his own private soldiers to have time to attend to business. The Chinese officials at these distant outposts in fact do little else but gamble, the work being done by the Kirghiz legs in the name of the Ambans. The system seems to suit all parties, for I never heard of any cases of oppression or discontent among these Mahomedan subjects of China.

From Tashkurghan to Kashgar there are several roads. I chose the one by the Gez defile, as it is the usual winter road, and one can ride the whole way. For the first few miles we continued down the Karachkur river, which we had followed for so many days. The river then turned east to Yarkand, while we continued north up the valley of the Kara-su. At ten miles from Tashkurghan we entered the large plain, some 50 miles square, of Tigharma, where in summer the Kirghiz bring their flocks and herds in thousands to graze. Crossing the Kara-su pass, we descend on to a wind-swept plain, then on, past the giant mountains of Mustagh Ata and Kungur, concerning the duality of which controversy raged so long, and over the ascent of one of which Sven Hedin recently spent so much time in vain. Leaving little Kara Kul on the right, where the wind blows so strongly all the year round that the lake never freezes over, we reach the fort and lake of Bulun Kul, and turning eastwards enter the Gez defile. For three days we wind our way along the river bed, between lofty precipitous rocks, through which the road is closed in summer on account of the volume of water, and emerge from the mountains at length at the village and Fort of Tashnahak, on to a stony, sandy plain, across which the road lies for the last 35 miles, to Kashgar, the last 25 through villages and cultivation, till we reach late at night on the 30th of October the hospitable dwelling of the British representative, Mr. Macartney, who with his charming wife lives in an anglicised Chinese house just outside the walls of the Mahomedan city of Kashgar. Here I was detained 17 days, during which I made the acquaintance of the large Russian Colony, visited the small colony of Swedish missionaries, and that eccentric but extremely clever

Dutch Missionary, Father Hendrics. I also called on the Chinese officials and had the honor of being invited to dinner with the Tao-Tai, or Vice-Governor of the Division of Kashgar. There is no need for me to describe a Chinese dinner; it has already been fully written about more than once in recent books of travel; suffice it to say here that the particular dinner at which I had the honour to be present was on the usual pattern; it began with shark's fins, included sea-weed and that great delicacy, suckling pig and crackling, besides some forty other courses, and ended up with the every-day Chinese dish of boiled rice, which notifies that the host has done all he can for you, and it is time for the guests to depart.

From Kashgar I sent my servants back to Gilgit, and started with two Cossack orderlies, kindly lent me by the Russian Consul General in company with the monthly Russian post, on the 16th November for Naryn.

We followed a large river bed the whole way up to the pass of Turug Art, by which we crossed the main Tian Shan range from China into Russia. Then, skirting along the southern shore of the Chatir Kul, we crossed the second range of the Tian Shan by the low depression in it which is not marked on any map, but is known locally as the Chatir Kul pass.

At-Bashi was reached on the 23rd November. Here resides the Russian "sub-district officer," in charge of the Kirghiz of these parts; his sway extends over 50,000 square miles of territory, peopled by a nomad population. Hiring the only droshky or cab the village contained, I drove the remaining 25 miles into Naryn. The road was deep in snow, and we had to cross a 10,000 foot pass *en route*, but the little Kirghiz ponies did the stage in 3 hours without a change.

As I drew up that evening at the post house, a Russian officer appeared at the door, greeted me warmly and invited me in to supper. This turned out to be my escort, who had been waiting here ten days for me.

At Naryn I parted with my Cossacks, but before doing so it may not be uninteresting to you if I say a few words about these wardens of the Tsar's Asiatic marches.

The Central Asian Cossacks know nothing of Europe; they have always moved forward with the frontier of the Empire, and are now practically Asiaticised Europeans. They talk Turki as fluently as Russian, and are quite at home among the Kirghiz, from whom, but for the rifle on the Cossack's back, it would often be hard to tell them. General Ionof, the Governor of Semirechia, told me he preferred the Cossacks as colonists to the Russian peasant.

When the Cossack joins his regiment for his term of service, he brings with him to this day his own horse and saddle, for they are what he uses daily in his own village, and if either of them go wrong, he can replace them with ease in any part of Asia at a moment's notice.

For the Cossack supply and transport difficulties are non-existent. A native follower, he has never seen or dreamt of. Consequently a Cossack can, at five minutes' notice, march to the other end of Nowhere.

For instance, while I was in Kashgar, an order came from Tashkent that the Tsar had given Dr. Sven Hedin permission to have two Cossack orderlies sent to him. No one knew exactly where Sven Hedin was just then, but he had been heard of some six months previously from the neighbourhood of Lob-nor. Within 24 hours of the receipt of the order the two Cossacks started off on a march of about a thousand miles into the heart of China to find Sven Hedin, and find him they did, as he told me himself the other day, when in India. Again, my march of ten days from Kashgar to Naryn lay through a country absolutely bare of all supplies but grass and sheep. The Cossacks with me had no transport, but each man carried on his trip bag two eight days' grain for his animal, and a week's bread for himself, besides his own and his horse's blankets, and a change of linen.

We left Naryn on 26th November by tarantass, on our long posting journey of 1,400 miles.

While we jolt along the road at the regulation pace of six miles an hour, let me try and describe to you the pleasures of long distance stage travelling in Russian Asia. After the incessant daily riding over every imaginable sort of road, by which I had accomplished the first six hundred miles of my journey, the pleasure of sitting at ease in a carriage, springless though it was, well muffled up in furs, revelling in the bright sunshine, and breathing in the crisp frosty morning air, can be better imagined than described; and this first stage of the long drive through Asia will remain in my memory as one of the most delightful experiences of my life.

So rapidly are railways springing up all over Asia that very soon these long posting journeys will be as much things of the past as stage coaching is now in the British Isles.

The roads in Asia are not metalled, consequently the going, as long as one is on wheels, is somewhat rough. As soon as the snow falls, however, and sledges can be used, the journey becomes delightful. At about every 18 miles along the road there are very good rest-houses at which a *samorai* of boiling water and bread are procurable, but meat dishes, fowls and eggs can only be obtained where there are villages. Of the latter, however, there are many along the route, and as good tinned provisions can be got at all the towns, no very great bother is necessary as regards supplies.

The rest-houses are let out on contract, generally to old soldiers, the contractors maintaining horses and vehicles for travellers who pay the hire for the same at each stage at fixed rates.

It is usual to post night and day, until stopped by want of horses. With a road 2,000 miles in length, and side roads cutting into it, it would be obviously impossible to regulate the number of vehicles to start from any given point each day, as is done, for instance, at St. Petersburg and Kalka. This matter is therefore left to chance. One is but seldom detained however. During my journey of 1,400 miles, with its 83 stages, and, excluding voluntary halts, taking 22 days to do, I was only detained four times for want of horses, and then only for a few hours at a time.

Each stage is done in some three hours, which in the winter, is about as much as a traveller can stand, without injury from the cold. Should the driver lose his way in a snow storm, as happened to me three times, and one is kept out between stages for some five or six hours, the traveller will probably get frost bitten. This will depend on the severity of the cold. We were, however, fortunate enough to experience no cold severer than 54 degrees of frost (Fahrenheit) till we reached the railway.

The Yemshchiks or drivers are chiefly Kirghiz, and no better drivers could be wished for on the wild, barren steppes. When the whole country is as flat as the palm of one's hand, and covered so deep in snow that no landmark of any sort or kind is visible, on a pitch dark night, with a biting wind hurling the falling snow straight in his face; with the telegraph posts invisible at even a few paces' distance, and yet the only mark of any sort or kind in the awful wilderness to give the general direction, I doubt if any human being in the world, except a Kirghiz, born and bred on these steppes, could find his way to the next station.

For 180 miles after leaving Naryn, the road wound in and out among the mountains. At one point we left the postal road, and took a short cut.

This necessitated our hiring vehicles and horses at a Russian village, by means of which we crossed the Kastek pass (12,000 feet high) and deep in snow. We did 60 odd miles that day, all with the one set of ponies. It shortened our journey by some two hundred miles, and at the same time gave one an idea of what the hardy Russian peasant and his game little ponies can perform at a pinch. For about 2 miles on each side of the top of the pass we had to get over solid ice, for the stream had run down the road and frozen there. We sat in the tarantass, sometimes with our feet above our heads, while the peasants and the ponies got the vehicle up the ice track.

We emerged from the mountains shortly before reaching the town of Vierny.

Vierny, as has been well said, was unknown in Europe until it ceased to exist. It was destroyed by an earthquake not many years ago. Since then it has been rebuilt, but almost entirely of wood. The town now numbers some 24,000 inhabitants, more than two-thirds of whom are pure Russians. It is the capital of the province of Semirechia, which has lately been incorporated in the Government of Turkestan.

During the few days I spent here I went round the barracks of one of the Infantry regiments, and was much struck with the comfort and cleanliness of everything. One point in particular that I noted was the entire absence of natives near the barracks, and on inquiry I found that such a thing as a native servant was unheard of. The men, in fact, do everything for themselves, just as in Europe. The kitchens, one per company, were as beautifully kept and found as in any good hotel in London, and the soldiers themselves not only buy and cook their food, but also bake their own bread. The Russian officers too all have soldier servants.

Is it too much to hope that our army in India may some day be able to do without its horde of camp-followers?

We left Vierny on the 7th December by tarantass, but soon met with the snow, and for the rest of the journey travelled on sledges. The comfort of the change is more than words can express, and as we lay back on our rugs and pillows, reading or chatting as the fancy suited us, while the sledge spun along smoothly over the crisp hard snow, we felt that life had not yet exhausted all its pleasures.

Travelling without stoppage except for meals, and to change horses and sledges, we reached Kopal on the 10th, Sergipol on the 14th, and Semipalatinsk on the 16th December. Here we halted for three days to give ourselves and our clothes a much needed wash.

In the summer the best way to go from here to the railway is by steamer down the river Irtysh. When we were there, this pleasant mode of travel was denied to us, as the river was locked in the grip of winter. The post goes along the road, down the right bank of the river to Omsk. This road is not particularly interesting at any time, so we decided to take the road by Barnaul, which looked as if it must get us to the railway somewhere, though exactly where we could not find out. The good people of Semipalatinsk have been so long cut off from the outside world that though the Siberian railway had been open for five years, they hardly seemed to be aware of its existence.

At any rate, to our enquiries about trains, etc., they politely responded "I don't know," and seemed much astonished that we should expect them to know. In fact, when I remonstrated with them on their ignorance about a railway which was so close to them, they simply stared and said "Close! why it is 450 miles away." "Oh, that is nothing," I replied; "I have come 1,500 miles to catch the train, so it seems close now to me."

Accordingly, when we left Semipalatinsk on the 19th December, on the last stage of our long posting journey, we were in pleasing ignorance as to where exactly we should strike the rail, but hoped to get some definite information on the point before long.

The country through which we were now going was quite different to anything we had seen before. Instead of the valleys and mountains of the Tian Shan, or the level steppes of Central Asia, we now found a pleasing mixture of both, on a small scale. Where before we had never seen a tree, except high up in the mountain side, or in an artificial grove, where they were being carefully nursed by the Russian Forest Officers, here we began to go through the outskirts of these enormous Siberian forests, which later on we were to see for days together from the railway carriage. In place of the wandering Kirghiz of the steppes, with small Russian colonies sandwiched in between their camps at long intervals, looking as if they had only just arrived from Europe, and not quite certain whether they liked the change, we now found at every station a large and flourishing colony, 200 and more years old, all peopled by pure Russians, with never a native of Asia to be seen anywhere. And yet somehow these Russian villages were unlike those in Europe. Here we found

broad streets, lighted with oil lamps ; our old friends the village church and bath house were there certainly, but there were also schools, and the public house didn't seem to occupy so large a space as in European Russia. Also these houses were trim and neat, and when we went inside, instead of the two dirty dark rooms, with the whole family asleep on the stove, we found pretty little furnished and clean rooms, that would do credit to any well-to-do farmer in Great Britain. The truth is that the Russian peasant in Siberia has been for so many years quite cut off from all Government assistance that he has had to work out his own salvation, and well has he risen to the occasion ; so that now, when he is at length being discovered by the curious traveller from the outside world, he appears to belong almost to a different race from the ordinary Russian Moujik.

The 22nd December sees us at Barnaul, famous for possessing one of the finest mineral museums in the world, where some small idea of the latent riches of the Altai mountains can be obtained. Its population is 30,000, all Russians.

At Barnaul we came upon the first traces of the railway in the shape of a time table hanging on the wall in the rest house. Our excitement was great ; we were now only 150 miles from the rail, and hoped in 24 hours to be in a train. Barnaul, however, had discovered the railway in order to make use of it, and we were delayed at every yard of the road by long lines of sledges, packed with frozen carcasses of animals, destined for the Tomsk and Irkutsk markets. At length we reached the last postal station at which we were to change horses, and from there drove straight down the frozen river Ob, 3 miles in width, through the new town of Novo-nikolayevsk, barely two years old, but already numbering more than 15 000 inhabitants, and finally drew up at the large handsome station of Ob, on the right bank of the river of that name.

Having at length reached the railway, and as you are probably as tired of my journey as I was myself, I propose to break it off here and to give you a slight general description of Siberia and the Great Siberian Railway.

Time will not permit of my giving you anything more than the roughest outline of Siberia and the Great Siberian Railway, and I would not venture to do even that but for the extraordinary ignorance that exists among even well-educated English people with regard to almost everything connected with Siberia.

Political Siberia, which also corresponds very fairly with physical Siberia, is about 5 million square miles in extent, and lies between 45 and 77 degrees of North latitude, and between 30 and 160 East longitude. Its land surface is about one-thirteenth of the land surface of the whole Earth, or about 3 times the size of the Indian Empire.

With such a vast extent of country it can easily be imagined that there is great variety not only of surface and geological structure, but also of climate, fauna and flora.

Time does not permit of my doing more than indicate in the briefest way possible the general characteristics of these variations. Roughly speaking, it may be said that the country divides itself into

three zones. The first or Southern zone is what we may call the agricultural zone in West Siberia, and the mineral zone in East Siberia. Then comes the middle or forest zone, and lastly, the zone of the tundras, where the Earth, at a depth of one foot below the surface, remains always frozen. Next, considering the configuration of the country from west to east, we find that West Siberia consists almost entirely of plain, which for more than 1,000 miles stretches eastwards with but an occasional hill of some 500 feet in height to break the monotony. Very different is it in Central Siberia. Here we have long stretches of hills, rising sometimes even to mountains, and interspersed with thick forests, stretching for many hundreds of miles, the whole ending finally with the thickly wooded mountains round Lake Baikal, which attain an altitude of some 6,000 feet. Trans-Baikal the country is entirely mountainous, and this characteristic prevails almost right up to the Pacific Ocean.

Now, a few words with regard to the climate. We have all heard of the severity of the Siberian winter, and if we consider merely the lowness of the thermometer, I am free to confess that report is correct. In December and January, the coldest months, the mean temperature of the Trans-Baikal region is about 33°C . (or 91° of frost Fahrenheit). The day I spent at Stretensk it was 52°C . or 125° of frost Fahrenheit. This is equal to the severest cold experienced by the Duc d'Angoulême on his Polar expedition.

Owing, however, to the absence of winds, this cold is easily endured, while the bright sunny days and clear dry atmosphere make it an ideal climate for consumptives.

In summer the heat is great, the mean Trans-Baikal temperature being about 80°F ., while for days together the thermometer will frequently rise to over 100°F .

With these few words of description of the country, I will now pass on to the railway, which has, it may almost be said, been the means of introducing this vast country to the great majority of us.

The first stone of the great Siberian Railway was laid by the present Tsar of Russia on the 31st of May 1891 at Vladivostok, when he was returning to Russia across Siberia after his trip to the East. The line was divided for purposes of construction into several sections, but certain of them being recognised as more important than the others, were constructed first. These were the West Siberian section from Cheliybinsk to Oby, the Central Siberian from Oby to Irkutsk; and the Ussuri section from Vladivostok to Khabarovsk.

In the second rank comes the Trans-Baikal section from Myskaya to Stretensk.

Finally, the remaining sections "round the Baikal Lake" and the "Amur river," being the most difficult, were left to the last.

Up to the present time all have been completed but the last two sections.

Since the original project for the line was conceived, more detailed surveys have shown the enormous difficulties that will have to be overcome in making these last two sections. When these become

known to the Committee charged with the construction of the railway, they set about devising other means whereby through communication from Europe to the Pacific Ocean might be established.

As regards the Baikal Lake section, it was proposed to carry the through trains bodily across the Lake on steamers, which should in winter cut their way through the ice. Two such steamers have been built, one to carry a train of 15 cars, and the other for passengers only. The first winter, owing to the bad situation of Mysovaya harbour, whereby the ice freezes solid in the harbour, the large steamer broke its shaft in cutting its way out, and through communication was interrupted for two months. This last winter, however, a new harbour was opened in a better position, and communication was maintained through the winter. The "circum-Baikal" line has therefore been postponed for the present till money is available. It will take both time and money as the line has to be cut out of solid rock almost the whole way.

Finally, as regards the "Amur river section." By a treaty with China, Russia was permitted to make a line through Manchuria direct to Vladivostok, with a branch to Port Arthur, taking off at Harbin Junction. A glance at the map will show that this is the shortest and most direct route that any line could possibly take from Europe to the Far East. It was hoped that direct through traffic from Europe to the Pacific Ocean would have been established before the close of last century. Owing, however, to the wrecking of the Manchurian section by the Boxers, that section had to be relaid almost throughout. Most of it is now completed, and there is every possibility that next spring our visitors returning to Europe after the Delhi Proclamation Assemblage will be able to complete a round tour by railings through from Port Arthur to Paris.

The Manchurian line takes off at a place called "Kitaiski Razyezd," "Change for China," which is 70 miles east of the town of Chita.

The Amur river line, there is little doubt, will be built at some no distant date, though it will not be used as the through line. The whole of the Amur region is full of gold, which may be said at present to be almost untouched. Similarly, the other goldbearing parts of the country are equally awaiting railway communications before they can be properly worked with large and modern machinery.

The distances along the Siberian Railway are as follows :—

Cheliabinsk—Ob	...	...	887 miles.
Ob—Irkutsk	...	...	1,145 miles.
Irkutsk—Baikal	...	...	40 miles.
Across Lake Baikal	...	...	60 miles.
Mysovaya—Change for China	...	...	520 miles.
Change for China—Vladivostok	...	...	1,180 miles (<i>viâ</i> Manchuria).
			<hr/>
			2,110 miles (<i>viâ</i> Amur).
			<hr/>

The total length of the line from Moscow to the Pacific Ocean is therefore about 5,200 miles *via* Manchuria, or 1,000 miles less than by the Amur river route, to which fact is, I think, mainly due the desire of Russia to get a footing in Manchuria.

The above distance is just twice the length of the Canadian Pacific line. Six trains have been specially built for the through service. They are fitted up with as many comforts and luxuries as a first class steamer. At present these trains run twice a week between Moscow and Stretensk, doing the 4,188 miles in ten days, the first class fare exclusive of food, being ten pounds.

The traffic that has sprung up since the railway is opened is almost incredible. To mention only one item: over a million pounds worth of butter was sent to England from Siberia last year.

It is the transportation, however, of the colonists from the congested parts of South Russia that will play the largest part in the future of Siberia. Since the railway opened in 1896 nearly two millions of state-aided emigrants have been conveyed along the line, and settled in various places in Siberia. The total population of Siberia is now over eight millions, less than 5 per cent. of whom have convict blood in them. As was the case with Australia, so now with Siberia, at the request of the inhabitants the deportation of convicts from the mother country has been absolutely stopped. It may easily be believed then that Siberia, probably the richest country in the world by reason of its latent mineral wealth, has a great future before it.

Those who are only now discovering Siberia, since the railway has made it accessible to the world, are much astonished to find it already so developed. To the average Britisher, Siberia has always been a land of convicts and cold. For have not his daily papers and magazines fed him to repletion with the horrors of the "political exile system," with all its attendant miseries?

Strange as it may appear, there is no doubt that Siberia owes much to this system, which to us in England has always been cause for censure. Be it understood I do not defend the system; I merely wish to point to its results. The political exiles were in most cases the advanced thinkers of Russia, the men with brains. Being forced to live in those distant regions, like sensible people, they made the best of their fate, and built towns, founded universities and museums, and generally did what they could to make life as pleasant as possible. The consequences of such action are only now beginning to be fully realised, when the railway has brought the outer world into touch with their work.

THE TRAINING AND EQUIPMENT OF CAVALRY AND MOUNTED INFANTRY IN INDIA, AND THEIR RESPECTIVE RÔLES IN WAR.

BY CAPTAIN R. G. BURTON, 1ST INFANTRY, HYDERABAD CONTINGENT.

Motto—"Circumstances govern everything in War."

INTRODUCTION.

That we must look to the history of the past for a guide to the conduct of future enterprises is a truism so obvious to the thinking mind that it seems at first sight scarcely necessary to draw attention to it. But it is to a neglect of the lessons of the past, and to an over-insistence upon untried theories, that disaster in most of the affairs of the life of both individuals and nations may be traced.

And prior to this latest war in South Africa the past, like an open book, lay before us, and in its pages all might read those lessons which have had to be bought again by many a bitter experience on many a bloody field. For the main principles of war have remained unaltered and only required to be modified in application by the light of common sense in view of the altered circumstances brought about by the perfection of modern weapons, and the improvement of modern means of communication. At the same time it must be remembered that the examples of history are to be taken merely as a general guide, and not blindly adhered to in all their details as stereotyped patterns.

After every war there is a cry for army reform. Inexpert theorists rush to extremes, and draw hasty deductions from the outer presentment of things without giving the question that calm consideration in the clear light of history which its nature demands. They prate of the lessons of the war, and discourse concerning our obsolete science, ignorant of the fact that the fundamental principles of military art, though capable of infinite modification, are immutable, and have existed through all time, differing only in the manner of their application according to those circumstances which govern everything in war. They are apt also to forget any personal element, such as the psychological character of nations, which enters into any contest of arms, for man is the primary instrument in war, and in comparison with the nature of the human being all else has but a relative importance.

Such critics have lately come to the conclusion that our latest struggle forms an object-lesson on which all future action should be

based, without considering that its phases have been merely certain ones among the ever varying circumstances of war.

But it cannot be too fully recognised that the war in South Africa has been fought under entirely abnormal conditions, which are obvious and need not here be specified, both as regards the physical features of the theatre of operations and the nature of our adversaries, conditions which would not be repeated in any conflict with a European foe.

There has been a demand for the abolition of cavalry. We are told that it is a mediæval and obsolete arm a mere useless ornament whose duties could be more effectively performed by mounted infantry. That is the cry of the ignorant critics, led by a successful novelist, whose efforts in the domain of fiction scarcely entitle his opinion on the art of war to any great consideration. However, such criticism is serious and therefore mentioned here, for the public, led by a vociferous press, is ever ready to seize on such opinions, and to mistake assertion for proof.

With regard to the proposed substitution of mounted infantry for cavalry, it may be sufficient to observe that the former could not carry out reconnaissance work effectively in open country, and in the face of an enemy armed with cavalry. It will be my endeavour, in discussing the rôle of cavalry, to show that it is no less necessary to retain that arm in the future than in the past. And it may here be remarked, and should ever be borne in mind, that, generally speaking, cavalry will resume its normal rôle and tactics their normal form when we come to contend with a European force organised, trained and equipped in a manner similar to the equipment, training, and organisation of our own army.

SCOPE OF THIS ESSAY.

Before the question of the military requirements of any country or nation can be decided, it is necessary that some definition should be given of the services which the armed forces are expected to perform, and of the duties they may have to undertake. It is the rôle of the statesman to furnish this definition to the military authorities, whose duty it then becomes to provide a scheme for the composition, organisation, training, and equipment of an efficient army for the fulfilment of the objects defined.

So also before we can formulate any system for the training and equipment of any of the arms of the service, it is necessary to understand the part which the arm in question may be called upon to play in the great game of war; the features of the country over which it may have to operate must be reviewed; the nature of the hostile forces with which it may have to contend must be considered.

The subject of this essay is one concerning which volumes might and have been written. It appears advisable, therefore, in this limited space to merely marshal facts and principles regarding the strategical and tactical rôles of the arms concerned, giving reasons for the conclusions arrived at, and illustrating where necessary, with examples from

history. The principles of the employment of the arms having thus been determined, it may be possible to deduce those details of equipment and training which will best enable them to carry out their rôle effectively in time of war.

THE RÔLE OF CAVALRY IN WAR.

General remarks.—In considering both the rôle in war of cavalry and its training, perhaps the first thing to be borne in mind is that the arm is merely an auxiliary one, of great value in assisting the army, *i.e.*, the infantry.

This is a fact which is apt to be forgotten by cavalry soldiers, who are too often prone to act as though they were entirely independent of the army to which they belong, and to forget that relation to the other arms on which their action depends.

Although the tactical details of warlike operations have undergone a great change in our time, due to improved methods of communication and the perfection of modern weapons of offence, it must not be supposed that the whole art of war has been subjected to complete transformation. Such a supposition would be entirely erroneous. The main strategical principles governing the art of war are immutable, and have existed through all time, since Hannibal's cavalry destroyed the Roman Army at Cannæ. Napoleon, the greatest of all exponents of the art of war, well understood this constant nature of fundamental principles, and drew much of his incomparable strategy from the campaigns of the ancients, applying it according to circumstances in the light of reason and common sense.

And of all arms cavalry has undergone least change as regards its rôle in war, by reason of its action being primarily strategical, and because of the nature of its armament which has not been in the main altered by changes of offensive equipment. In short, the strategical rôle of cavalry is unaltered, and its tactics remain as heretofore primarily dependent on rapidity and vehemence of shock. For although the importance of the use of firearms by cavalry has greatly increased under modern conditions, care must be taken that the main principle of its tactical action with cold steel is not forgotten; otherwise it will become mounted infantry.

With regard to the possible theatre of hostilities of the army in India, it may be assumed that it contains within its limits every diversity of physical feature; every variety of climate, and every description of means of communication, including as it does the whole of India, and extending thence far in a northerly and westerly direction. Nor must it be forgotten that it may be called upon to act beyond seas, as recent events have shown.

So also the force with which cavalry (and other arms also) might be called upon to contend varies from the roughly-armed rabbles of an eastern city in every degree up to the perfectly trained and equipped army of a European power of the first order. And as the great secret of success lies in leaving nothing to chance and in being prepared for every eventuality, it may be taken for granted that both our

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SCOPE OF THIS ESSAY.

Before the question of the military requirements of any country or nation can be decided, it is necessary that some definition should be given of the services which the armed forces are expected to perform, and of the duties they may have to undertake. It is the rôle of the statesman to furnish this definition to the military authorities, whose duty it then becomes to provide a scheme for the composition, organisation, training, and equipment of an efficient army for the fulfilment of the objects defined.

So also before we can formulate any system for the training and equipment of any of the arms of the service, it is necessary to understand the part which the arm in question may be called upon to play in the great game of war; the features of the country over which it may have to operate must be reviewed, the nature of the hostile forces with which it may have to contend must be considered.

The subject of this essay is one concerning which volumes might be and have been written. It appears advisable, therefore, in this short space, to merely marshal facts and principles regarding the strategic and tactical rôles of the arms concerned, giving reasons for the conclusions arrived at, and illustrating where necessary, with examples, the

history. The principles of the employment of the arms having thus been determined, it may be possible to deduce those details of equipment and training which will best enable them to carry out their rôle effectively in time of war.

THE RÔLE OF CAVALRY IN WAR.

General remarks.—In considering both the rôle in war of cavalry and its training, perhaps the first thing to be borne in mind is that the arm is merely an auxiliary one, of great value in assisting the army, *i.e.*, the infantry.

This is a fact which is apt to be forgotten by cavalry soldiers, who are too often prone to act as though they were entirely independent of the army to which they belong, and to forget that relation to the other arms on which their action depends.

Although the tactical details of warlike operations have undergone a great change in our time, due to improved methods of communication and the perfection of modern weapons of offence, it must not be supposed that the whole art of war has been subjected to complete transformation. Such a supposition would be entirely erroneous. The main strategical principles governing the art of war are immutable, and have existed through all time, since Hannibal's cavalry destroyed the Roman Army at Cannæ. Napoleon, the greatest of all exponents of the art of war, well understood this constant nature of fundamental principles, and drew much of his incomparable strategy from the campaigns of the ancients, applying it according to circumstances in the light of reason and common sense.

And of all arms cavalry has undergone least change as regards its rôle in war, by reason of its action being primarily strategical, and because of the nature of its armament which has not been in the main altered by changes of offensive equipment. In short, the strategical rôle of cavalry is unaltered, and its tactics remain as heretofore primarily dependent on rapidity and vehemence of shock. For although the importance of the use of firearms by cavalry has greatly increased under modern conditions, care must be taken that the main principle of its tactical action with cold steel is not forgotten; otherwise it will become mounted infantry.

With regard to the possible theatre of hostilities of the army in India, it may be assumed that it contains within its limits every diversity of physical feature; every variety of climate, and every description of means of communication, including as it does the whole of India, and extending thence far in a northerly and westerly direction. Nor must it be forgotten that it may be called upon to act beyond seas, as recent events have shown.

So also the force with which cavalry (and other arms also) might be called upon to contend varies from the roughly-armed rabbles of an eastern city in every degree up to the perfectly trained and equipped army of a European power of the first order. And as the great secret of success lies in leaving nothing to chance and in being prepared for every eventuality, it may be taken for granted that both our

cavalry and mounted infantry should be given a training and equipment which may enable them to deal effectively with any of the forces above specified. There is, however, this to be said with regard to the army in India, that any special tactics and armament suited particularly to savage warfare must be borne in mind.

STRATEGIC RÔLE OF CAVALRY.

The action of cavalry resolves itself into two phases—the strategic rôle on the theatre of war, and tactical action on the field of battle.

The strategic action, again, of the so-called independent cavalry is divided into two periods—that during mobilisation and that during the subsequent approach of the armies towards tactical contact. There may be in addition a strategic pursuit, or similar action covering retreat in case of a reverse.

The use of cavalry during mobilisation scarcely affects us in India, referring more to belligerent powers having contiguous frontiers. It is not, however, wise to leave anything to chance, but to consider all the possible circumstances of war, so the matter may here be shortly discussed, whilst some of the details are applicable also to its subsequent action.

During mobilisation.—The rôle of cavalry during mobilisation and the concentration of the hostile forces may be summarised as follows :—

- (1) The grouping of the cavalry on the principal and probable routes of the enemy's advance, and the seizure of strategic points in front of its own army, with the object of covering the latter.
- (2) The fight with the enemy's cavalry, and opposition to his attempts to break into the area of concentration.
- (3) The carrying out of reconnaissance by sending out scouts from the advanced parties of the cavalry, and the execution of reconnaissances in force by more independent detachments from the supports.
- (4) Raids on the adversary's rear to do as much damage as possible, and to interrupt the course of his mobilisation by the destruction of railways, lines of telegraph, etc.

It follows that the cavalry should be so disposed as to cover a widely extended front, and should at the same time be able to concentrate for effective action when necessary. In order to cover the mobilisation and concentration of its own armies on the theatre of operations, it will seize important strategic points on the line of advance or line of defence, which may probably involve a considerable amount of fighting with the enemy's mounted troops. In this the cavalry might be well supported by mounted infantry, which could relieve them of the task of tactical occupation of the points seized, and thus set them free for further advance.

At the same time it will be necessary to reconnoitre both the country and the enemy, for the purpose of gaining information re-

garding the movements of the latter, and the direction of the concentration and grouping of his forces, with a view to disclosing his intentions. The strategic cavalry must, therefore, be sufficiently strong to pierce the enemy's screen, and to prevent the latter from penetrating its own.

It is evident, therefore, that cavalry must be active and enterprising in all its movements (mobile and ubiquitous), and the main body of the "independent" division must seek out and if possible defeat the main body of the hostile horse, in order to paralyse his advanced parties by removing their support, and for the purpose of facilitating the operations of its own parties. In case of failure the cavalry must fall back on its main army, retaining the screen in position in front if possible.

Having obtained touch with the enemy's main forces, the cavalry must remain in observation and be careful not to lose contact.

It is quite possible that the enemy may succeed in pushing his parties through the cavalry screen; hence the necessity of retaining a sufficient force in reserve with which to act in such case.

Raids.—In order to interfere with the mobilisation and concentration of the hostile army, and thus gain time, raids should be carried out in various directions by *independent* bodies, which must penetrate into the very area of country in occupation of the enemy. From the moment of declaration of war such bodies should be pushed ahead with general instructions to inflict all the damage they can upon railways, roads, telegraphs, bridges, supplies, etc., the manner of carrying out these instructions being left to the commanders of the raiding forces.

The question of the organisation of cavalry does not come within the scope of this essay, but it may be remarked that the forces destined for particular undertakings of this description should be told off in time of peace, so as to be prepared for immediate action on the outbreak of war.

Authorities differ as to the probable value of raids carried out by large bodies of cavalry during a European war. It has been pointed out by Von der Goltz that the conditions of the American civil war, where such enterprises were so eminently successful, were different to any which would obtain in Europe. The Franco-Prussian war has also been referred to as an instance where raiding was not employed with any success. I fail to see, however, why such raids should not be carried out, and it would seem that they might be most effective in, for instance, the case of a war with Russia, where the long lines of communication of the hostile power would afford many vulnerable points for attack. What is required is a suitably organised body of men for the service, and above all a born leader to command them. With a Stuart, a Morgan, or a Platoff great things might be done, but not with our over laden cavalry and indifferent horse-masters. The failure to carry out such enterprises in recent warfare appears to have been due more to the want of an efficient body of men for the service than to any impracticability of the undertaking. We want for this purpose men who can ride out into a strange

country, taking with them a few days' rations; who can raid for supplies for themselves and their horses; who can reconnoitre the country and the enemy; and find out where and how they can fall upon him and do him most damage; and can take care of themselves in every way. An energetic raid by the mounted forces of an army on the defensive on the enemy's rear with the object of destroying communications, etc., will interfere with his advance, will affect his mobility, and distract his attention. The experience of the American civil war shows how effectual such raids were in drawing off considerable forces from the front of the army, and, under favourable circumstances, in upsetting aggressive operations. Had suitable forces been available, would not such raids have been effective if carried out against the Boer lines of communication during the investments of Ladysmith and Kimberley? Armies are nowadays more than ever dependent on their communications, so that well-organised and well-executed raids might have almost decisive results.

The destruction of Lord Roberts' convoy on the Orange River coupled with the loss of the water-supply at Bloemfontein, almost paralysed the movements of the army, and doubtless greatly contributed to the wasting of the army by disease; both these enterprises were of the nature of raids.

The question whether such raids would best be carried out by cavalry or mounted infantry depends, like all else in war, on circumstances, such as the enemy's composition and the nature of the country. In enclosed or hilly country doubtless mounted infantry could carry out this duty efficiently, but in open and flat regions, against an enemy well provided with cavalry, they would be the rôle of the latter arm. Mounted infantry would be liable to be cut to pieces if caught by cavalry in the open.

Of course a raid by the three arms in combination would be more likely to draw off a portion of the enemy's forces than one by cavalry alone; and such an enterprise might perhaps be carried out under favourable circumstances by cavalry, mounted infantry, and mobile machine guns.

Strategic rôle of cavalry subsequent to mobilisation.—It is probable that one side will have completed its mobilisation more quickly than the other, and will thus be in a position to move first towards the theatre of operations. At any rate, when mobilisation on one or both sides is completed, campaigns enter upon a second strategical phase, during which the hostile forces are approaching towards tactical contact at the decisive point, or when one side is standing on the defensive, awaiting the onslaught of the adversary. Raids of the nature above described may be carried out effectually during this period should circumstances admit of it, and may be of great service during the whole period of operations, in drawing off portions of the hostile forces and in hindering concentration. Such raids will probably prove of more service during this phase of the operations than at any other period, if carried out against the enemy's rear and lines of communication. The raid carried out by Forrest during the American war in 1864 may serve as an example of such operations. In

February, 1864, Grant was undertaking a general concentric movement on Atlanta, which was occupied by a Southern Army 18,000 strong. Sherman, with a strong column, was advancing from Vicksburg: Smith, with 10,000 cavalry, from Memphis; and Thomas, with an army, from Chattanooga. The cavalry of the Southerners, surrounding a corps 37,000 strong advancing from Vicksburg, delayed its movement, and finally obliged it to halt at Meridian. In the meantime Forrest with 3,000 horse fell on Smith's column, and put it to flight, scattering it in all directions. The general result of this important raid was to upset all the operations of the federals. Sherman hurriedly retreated, and the Southerners, having succeeded in concentrating against the Chattanooga army, beat off its attack.

While the approach towards tactical contact is taking place, the general rôles of the adversaries will resolve themselves into the offensive and defensive. The latter, covering its front with advanced guards on the main lines of approach, concentrates in some central region in their rear, whence the forces can at once be moved to any threatened point. The side taking the offensive, in order to carry out the plan of operations which has been determined on, moves as circumstances require—separating to live and gathering to fight,

It is self-evident that during this phase reconnaissance by the mounted arm will be all important to both parties, in order to obtain information as to the disposition and movements of the adversary, whilst at the same time covering their own forces. Simultaneously auxiliary enterprises may be undertaken. Demonstrations may be made to draw off the forces or the attention of the enemy, and possibly some portion of his troops may be isolated. Here, as ever, action on the enemy's rear is of the first importance.

As the armies approach towards collision the front will be gradually cleared when the opposing forces draw near, until finally the cavalry will be assembled on the flanks, remaining in observation or acting as required on the flanks and rear of the enemy when the opponents step into the arena.

Strategic action has now ceased, but may reopen on the conclusion of the battle, with strategic pursuit or covering of a retreat.

Strategic pursuit.—The decisive collision of armies, or a series of decisive battles, leads to a general retreat of the beaten army and to its pursuit by the adversary—an operation which will signalise the closing period of the campaign. To exploit a victory is one of the principal tasks of strategy. It will now be the rôle of the defeated force to gain time in order to place either fresh troops or some natural obstacle between itself and the victor, so that it may have leisure to recover; hence it becomes the object of the latter to undertake immediate uninterrupted pursuit, obviously the rôle of the mounted arm, *i.e.*,—cavalry supported by mounted infantry. Without such a pursuit the fruits of victory are lost, as they were for want of cavalry by Napoleon after the battles of Lutzen and Bautzen in 1813. In fact, without effectual pursuit the enemy's army cannot be utterly destroyed, but is able to recuperate

itself to fight another day ; whereas effectual pursuit may decide the fate of a campaign, as did that of the Prussians by Napoleon after Jena.

It would appear that in our day, owing to the lowering of the moral forces sustained during lengthy battles, to the difficulty of obtaining supplies, and the want of mobility in the immense armies of modern times, the importance of the pursuit has increased, and with it the value of cavalry during this phase of the operations, whilst at the same time modern weapons may increase the difficulty of carrying it out.

Tactical pursuit after an action would appear to be more difficult for the above reasons ; the strategic pursuit therefore gains in proportion. The troops which have taken part in an action will be unfit to undertake immediate pursuit, which requires fresh forces, save, perhaps, in the case of the cavalry, which may very likely have had little to do on the field of battle. Evidently the rôle of cavalry in the pursuit is more important than ever. It remains to consider the execution of this strategic action.

In the pursuit it is evidently most desirable to "round up" the enemy, to delay him until the pursuing army can arrive, and therefore to cut into his line of retreat. For this purpose it is most effectual to carry out a parallel pursuit on both flanks, keeping touch with small parties whilst large bodies are concentrated for tactical action, and constantly threatening to cut him off from his base—a rôle that can obviously be performed by mounted troops alone, and therefore only by cavalry (assisted if feasible by mounted infantry) if the enemy is provided with that arm. It was in this manner that the Cossacks pursued the Grand Army during its retreat from Moscow in 1812. At the same time bodies of cavalry and mounted infantry may be despatched to destroy magazines, railways, roads, etc., in the line of the retreating army ; to occupy defiles, bridges, fords and other strategic points, and so hold the enemy until the arrival of the pursuing force ; or even oblige him to surrender, as Sheridan, pursuing Lee after the battle of Appomatox in 1865 with 10,000 horse, forced him to capitulate with an army of 20,000 men. The absence of effectual pursuit after the battle of Worth enabled MacMahon to reassemble and reorganise his scattered and flying forces. From this it is evident that the rôle of the cavalry of the retreating army is to engage at all hazards the forces launched in pursuit, and so to gain time for its own army to escape, or recover from defeat.

TACTICAL RÔLE OF CAVALRY.

The tactical rôle of cavalry may be divided into—

- (1) action on the field of battle ;
- (2) detached duties ; reconnaissances ; outposts ; advanced, rear and flank guards ; screening duties, raids, surprises, ambuscades, foraging, and convoy duties. Again the action of cavalry may be divided into that with cold steel, and action by fire.

Cavalry on the field of battle.—The arguments held by extremists that, owing to the altered conditions of modern warfare, there is no

longer any place for cavalry on the field of battle, may be dismissed at once as the figments of imagination that are appalled by the range and accuracy of modern firearms. That its tactics must be modified to suit altered circumstances no one can deny. It must conform its rôle to the development of the tactics of the other arms, and no longer cherish those illusions which may be relegated to the domain of glorious tradition, and for which, if it sustained them, it would have to pay by unnecessary and useless bloodshed.

It may perhaps be said that of all arms the tactical rôle of cavalry has changed the least, its armament with cold steel (to which the firearm is auxiliary but of increased importance) being practically constant. The effect on its tactics of modern firearms and its employment of fire have, however, to be considered. Rapidity of movement and vehemence of shock remain as hitherto the two essential characteristics of the tactical rôle of cavalry in action. To these must be added the secondary one of fire.

Effect of alteration in tactics on the rôle of cavalry.—In the time of Frederick the Great the "tactics of line" prevailed. There were practically no reserves, the troops being formed in two or three lines which were with difficulty manœuvred to support each other. When these were broken, the battle was won.

Nowadays we see that the disposition of troops in action has radically changed. Their tactical formation is founded on the principle of echelon in depth, and on strong reserves. The attacking cavalry, having forced its way through the front lines, is confronted with fresh troops, and the farther it penetrates into the dispositions of the enemy, the more resistance does it meet with. Thus the changes in tactics alone, even without taking into consideration the enormous effect of fire at long ranges, greatly lessens the chances of a successful irruption of cavalry into the deep hostile position. Irrespective of this, even the successful breaking by cavalry of the fighting lines cannot have much influence on the general result of the battle, as the commander of the defenders will have at his disposal a reserve with which to parry the blow. Moreover, with existing large armies, the fighting lines of which extend along many miles of front, a temporary break at one point can have but little effect. When such a break is accomplished, however, would appear to come the turn of the mounted infantry, which, following the cavalry, should attempt to extend or confirm success.

But it is apparent that frontal attacks by cavalry on infantry, even if feasible, as they might be under favourable circumstances, can have no decisive success or extensive effect, owing to the tactical disposition in depth and echelon of modern armies. The same remark would apply to flank attacks, the effect of which would be only local, owing to the great extent of the field of battle.

Modern formations, in fact, do not offer much of a "target" for a cavalry charge. And, having broken through the first line of the hostile force, the cavalry would find itself confronted by further lines, probably entrenched and unassailable. It would therefore

appear that, as a general rule, it will not repay cavalry to charge a line of battle, although it may sometimes reap local success by such action.

Effect of increased efficiency of modern fire on the tactical rôle of cavalry—The augmented effect of fire depends on (1) accuracy; (2) trajectory; (3) rapidity; (4) range.

(1) The increased accuracy of modern arms has undoubtedly increased the loss which cavalry would have to undergo during attack. This may be exemplified by two instances: the one successful by Von Bredow's brigade, the other unsuccessful by Michel, both during the Franco-Prussian war. Of six German squadrons which took part in Von Bredow's attack, not much more than one squadron escaped; whilst Michel's brigade and the 13th Hussars were practically annihilated. At the same time it must be remembered that the extent of losses does not count if commensurate results are obtained.

(2) The low trajectory of modern weapons has a great influence in beating off the attacks of cavalry. Infantry can as a rule **only** make use of unaimed fire against charging cavalry, but with modern arms, firing point blank up to 600 or 700 paces, the infantry can effectually use unaimed fire up to great ranges. And if cavalry lost so heavily in the Franco-Prussian war, what would its losses be **now**?

(3) Rapidity of fire does not appear to exercise so much influence. The number of shots fired from a line extended under modern conditions would probably not be much, if any, greater than the number fired from the closer formations of a century ago. Thus if cavalry has to cross a space swept by 5,000 bullets, it makes little difference whether the projectiles are fired from magazines of 10 cartridges by 500 men extended, or from single loaders by 5,000 men in close order. In fact the latter would probably fire more accurately; whilst the modern small bore bullet has little stopping power compared with the heavy projectile of former times.

(4) The great range of modern arms affects cavalry somewhat unfavourably on the field of battle. It causes an early dispersion of the contending hosts over great areas, and the fight is carried out at great distances; hence cavalry, "the weapon of the moment," will find it difficult to seize those fleeting moments during the battle which are favourable to its action, and it will have to advance long distances under fire before coming within range of its objective, unless the terrain should be peculiarly favourable. It is, moreover, difficult for the commander to follow closely the course of the fight at such great distances, and to select the right moment for attack.

Modern conditions favourable to cavalry action on the field of battle.—But there are some circumstances which favour cavalry action under modern conditions. The area of tactical action has grown in both depth and breadth, hence cavalry will have a wider field in which to seek an opening, which will facilitate its unexpected appearance before the adversary, increasing its moral effect and favouring its attack, surprise being always a great factor in success.

Under modern conditions the battle will be long drawn out, and will be carried on for many hours at different points for the posses-

sion of certain localities or positions, whilst the infantry will be under a strain for days. The bloody scenes of the fight will be continuous; there will be no wild charging and cheering of the infantry amid the smoke, to sustain the spirits and fire the energies of the combatants; the horrors of battle will be ever before them, and they will become physically exhausted. But the cavalry, held in leash under cover, will not undergo this torture, and will be comparatively fresh for the attack on exhausted infantry.

The objective of cavalry on the field of battle.—It remains to be considered what should be the general rôle—the main object to be striven for—of cavalry on the field of battle. No doubt it should first seek out and destroy the enemy's cavalry, and having disposed of that should be directed against the enemy's most vulnerable points. Rapidity of movement is its chief attribute, and on this its efficiency is in the main dependent, enabling it to be swiftly directed upon any point where its presence is desired. Hitherto cavalry has utilised its mobility on the field of battle for the rapid passage of fire-swept zones when moving to the attack, and for actual assault upon the adversary. But it must now make use of this quality to strike the adversary in his most vulnerable part—the rear. This is a point which appears to have been generally lost sight of. Napoleon said: "Cavalry can and should be used with success in action during the whole period of the fight, and especially on the flanks and rear of the enemy." The difficulty of action on the rear is not so great under modern conditions as that of a frontal or flank attack.

On the concentration of the army on the field of battle the cavalry, having cleared the front of its army, should assemble on the flank or even at a distance from its own forces, at a point whence it can conveniently move against the enemy's rear. Only sufficient cavalry for observation and for keeping up communications should remain in the line of battle.

Not only will the attack, or even threat on the enemy's rear, where the supports, reserves and supplies are concentrated, and where the communications lie, have a far-reaching moral and physical effect. The cavalry will there find itself in a position most favourable for taking up the pursuit in case of victory, or for sacrificing itself to protect its own army during retreat in case of defeat; whereas in its usual post in modern war it is long before it can arrive at such a position.

We thus come round again to the same rôle that the mounted arm had in time of Hannibal, who, throwing the Carthagian horse under Hasdrubal on the Roman rear at Cannæ, completed the discomfiture of his adversaries.

Detached duties.—The rôle of cavalry on detached duties is fully laid down in the authorised drill-book, and any existing defect in this respect would appear to be due more to want of adaptability and training than to any absence of knowledge regarding the functions of the arm.

It may be remarked that no formed body should ever move without being covered by scouts. As tactics have become more complicated under modern conditions, so has the obtaining of information by reconnaissance become more difficult and more important. The manner of carrying out this rôle must of course depend on circumstances. The drill-book constitutes a sufficient general guide. Frequently it appears that cavalry is unnecessarily split up on the service; unnecessary dispersion is to be avoided, and, whilst small parties are pushed ahead as feelers, the principle of concentration, which can alone confer the initiative, must be kept in view.

In scouting the rôle of the scout is to see without being seen.

The importance of screening duties was well understood by Napoleon, who said: "In war secrecy is of the first importance," and the rôle of cavalry in preventing the enemy from gaining information is no less important in our time.

The tactical functions of the mounted arm on outpost duty, in advanced and rear guards, and flanking patrols, in raids and ambushes are fully described in the drill-book.

Cossack tactics.—In view of the possibility of the army in India being called upon some day to contend with the Cossacks, it may be well to give some consideration to the rôle that should be adopted in meeting the tactics peculiar to that portion of the Russian cavalry.

The principal tactical formation of the Cossack is the *lava*, which is subject to no rules or words of command, but varied according to circumstances, and it seems it would be best met by somewhat similar tactics, to which our native cavalry are specially adapted.

The Cossack regiment is massed together, or stands in masses of *sotnias*, according to the orders of the commandant, the front generally occupying a considerable extent. Each cossack attaches himself to his *uriadnik*, or non-commissioned officer, each *uriadnik* keeps his eye on his *sotnik*, or centurion, and all follow the standard of the commandant. The scouts give information of the enemy's approach; the commandant calls up his *sotniks*, and explains his intentions and the signals to be adopted, which are in turn explained to the other ranks. The regiment then deploys into a long extended line, with flanks thrown forward, ready to attack or manœuvre, as the case may be. Having scattered to the extent of perhaps a couple of thousand yards, a distance too great for the passing of commands, the cossacks follow their officers in a swarm, all changes of direction and pace, and the signal for the attack itself, being made by means of a sign with the sword or hand, or the movements of the horse itself.

An example may be given: (1) "Suppose the *lava* to occupy with its front an extent of two thousand yards, in which extent there is a small but swift stream and a narrow ravine. The object of the manœuvre is to entice the enemy, a force of cavalry, towards artillery and infantry concealed behind a bush-covered slope at a distance of some 400 yards. The *lava* advance at a walk. Arriving at the stream

Note (1).—The Cossacks in War. *United Service Magazine*, September 1896.

a number of Cossacks, at a signal from their commander, drop from, their horses, which are taken charge of by a few comrades in rear, and conceal themselves along the bank, whilst the remainder cross, and the *lava* proceeds on its way. Arriving within two or three hundred paces of the ravine, more Cossacks halt, and the *lava* now looser, but occupying the same frontage, continues to advance on the hostile cavalry, firing from on horse back, and galloping to within pistol shot of them. But no sooner does the enemy send out one or two sections to drive off the bold horsemen, then the *lava* gives way, the flanks thicken, and from flanks and rear the cossacks throw themselves on their pursuers with loud cries. Finally this manœuvring begins to harass the enemy, and arouse his anger. He sends out a regiment or two to punish the Cossacks who, retiring, assemble in two groups, one of which makes for the stream, whilst the other takes the direction of the ravine. At twenty or thirty paces from the obstacle the Cossacks of each group turn swiftly off to the right and left, and pass round them. The closely formed squadrons launched in pursuit cannot so swiftly change the direction of their charge. Some fall into the stream under the fire of the Cossacks who were concealed on the bank, and others, disordered in crossing the ravine, fall into the other ambush; whilst at the same time the *lava* swarm has turned back and attacked them fiercely in flanks and rear. The result is the retreat of the hostile squadrons, the despatch of a larger force, and a new enticement by the *lava*, this time towards the stronger ambush of infantry and artillery. For the success of such an undertaking it is obviously necessary that none of the manœuvres should be repeated. An endless change of locality, of time of year, of day and night, gives means for a variation of the operations; so the *lava* is endlessly varied, formless, and untangible."

Such tactics are worthy of consideration; and the affair of Sanna's Post, and other events in South Africa, has shown what loss an ambuscade can inflict upon the enemy that falls into it.

Fighting in loose formation, employing dismounted action, and on occasion firing from on horseback, would appear to be the best rôle for cavalry, aided by mounted infantry, and horse and machine guns, to employ against the *lava*. As regards the employment of cavalry in dismounted action, and in firing from on horseback, it is impossible to lay down any rules adaptable to all circumstances but it may be assumed that fire should not be delivered from horseback when it can be done from on foot, and that whilst action by fire has gained increased importance under modern conditions, cavalry must not forget that cold steel is its first weapon.

Cavalry and mounted infantry in combination.—As an example of the tactics of cavalry combined with infantry, the following account (Note No. 2) of the battle of Rossbach may well be quoted. Although ancient history, it is none the less instructive, as showing what the effect of such combined operations with mounted infantry in place of foot soldiers might be in our time under favourable circumstances.

Note. (2)—"Frederick the Great." By W. O'Connor Morris.

"Seidlytz and his fine cavalry pressed onwards to the hill of Polsen; he was supported by a body of choice infantry. By this manœuvre, ably conceived, and skilfully carried out, the Prussian army, at least in part, was placed in a position of vantage, commanding the flank of the enemy at hand; and as the movement had been masked by hills and folds of the ground, Soubise and his colleague were in complete ignorance of it. The result was one of the most amazing ever seen in war. Seidlytz, charging home with characteristic energy, smote the heads of the allied columns as they advanced in disorder and reckless confidence; the guns from the Janus hill opened on them with fatal effect; the Prussian Infantry skilfully supported the attack. In an incredibly short time the whole allied army, surprised, discomfited, and stricken with panic, was a mere chaos of fugitive rout; idle attempts at resistance proved fruitless; some 11 000 men were killed, wounded or made prisoners; the remains of the beaten hosts swarmed over the adjoining country, a demoralised, straggling and worthless horde. An army, more than 50,000 strong, had been shattered to atoms by less than 10,000."

In conclusion it may be deduced that cavalry is still invaluable in the pursuit of a beaten and demoralised enemy, regarding which Koenig has said with some truth: "it is all one to the pursuing cavalry whether the flying troops carry magazine rifles or pitchforks."

EQUIPMENT OF CAVALRY.

General remarks.—Mobility being one of the primary attributes desirable in war, it is evident that the main principle of the equipment of troops should be reduction of weight, so far as is compatible with efficiency in other respects. Without going so far as to advocate the measure proposed by the distinguished officer who, in a moment of enthusiasm, exclaimed, "Let us strip ourselves of all but our arms and our honour," we may nevertheless relieve our cavalry of much of its burthen.

The question of equipment is a large one. Taken in its widest sense it may be taken to include horses, saddlery, all articles of stable equipment for peace and war, camp equipage, intrenching tools, signalling apparatus, arms, ammunition, and the clothing and equipment of the men themselves. With regard to clothing it is impossible to lay down rigid rules. It must be adapted to local climatic and other conditions. Where possible, buttons, badges and other metal fittings should be of dull metal, preferably aluminium. Some articles call for detailed notice. Others are sufficiently provided for in existing regulations.

Regimental equipment.—Regimental equipment may be taken to include machine guns, transport, camp equipage, ammunition, field forge, signalling equipment, medical panniers, veterinary requisites, portable canvas troughs for watering, pakhals. Every cavalry regiment, British or native, should have at least one maxim gun.

Transport should be the most mobile obtainable, pack animals for choice, but light carts with mules or ponies might be used if suitable to the communications on the theatre of war. The equipment above specified is satisfactorily provided for under present regulations.

Saddlery.—The saddle and furniture should be as light as possible, compatible with strength, and should be stripped of all superfluous metal. Saddle bags might be advantageously substituted for wallets.

Arms.—Cavalry should be armed with short rifle, carried in a bucket and attached by a leather thong to a strap round the shoulder, sabre, revolver or Mauser pistol, and in some cases lance.

The sabre should be slightly curved, so as to be adapted for cut and thrust.

The lance has been proved by experience to be a most effective weapon, but it is not without its disadvantages. Front ranks are undoubtedly best armed with lances for shock tactics, and their length gives them a great advantage over opponents armed with sabres, but they cannot be used as effectively in a *melée*. Against infantry, and especially against savage men who lie down to receive a charge and cannot be reached by a sabre, the lance is the best weapon, but in reconnoitring it is an encumbrance.

Weapons, like tactics, must be adapted to ever-varying circumstances, and some regiments of lancers must undoubtedly be kept up, both for use against oriental foes, and to contend with possible European enemies similarly armed. But scouts should not be encumbered with the lance.

Personal equipment.—Scouts should be provided with good binoculars, and those scouts who know how to use them (as all should be trained to do) with magnetic compass, and materials for reconnaissance work. Where possible metal fittings of havresacks, etc., buttons, and water-bottles should be made of aluminium. Lance heads and all other metal should be dulled so that it will not act as a heliograph.

Clothing must be adapted to climatic conditions. Shooting boots and leather gaiters are better than long boots, and the gaiters protect the leg more effectually than putties. Warm greatcoats should be provided, with a waterproof cape which would serve as a ground sheet.

A thick blanket might be carried under the saddle, and the *numnah* could be discarded.

Remaining articles of equipment are fully provided for by existing regulations.

TRAINING OF CAVALRY.

Having determined the rôle of cavalry in war, and the equipment most suitable for its performance, we can now pass to the means by which efficiency is to be maintained in its functions. It is plain that under modern conditions any system of practical training which does

not embody as one of its main features the development of individual intelligence must be comparatively useless. At the same time it is most necessary to take care that discipline is in no wise slackened, for it is the greatest incentive to courage, and is the soul of the whole military system. The individuality of the Boers has enabled them to offer a stubborn resistance, and to obtain considerable success in minor tactical operations; but the want of that discipline which can exist only in a regular army has prevented them from undertaking those great combined offensive operations which can alone lead to any decisive success in war. The general subjects requiring treatment under this heading are broadly as follows:—

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| 1. Physical training. | 4. Care of horses. |
| 2. Use of arms. | 5. Drill. |
| 3. Equitation. | 6. Manœuvre. |

These are taken to include theoretical training. In addition there will be the training of the horses in the manège, in the ranks, and in swimming.

All these subjects do not call for particular notice here, as the elements of them are generally well provided for under the existing system.

It may be remarked, however, with regard to the care of horses, that more attention should be paid to it than has hitherto been the case, the men being instructed to dismount whenever possible on the march and elsewhere, and to attend to their animals' wants before looking after themselves. Less time should be given to drill, and more to manœuvre, to which the former is merely preparatory.

As regards the use of arms, modern conditions demand increased efficiency from cavalry with the rifle, whilst at the same time it should not be forgotten that cold steel is their first weapon.

Remounts.—It has been well said that “the unconditional obedience of the horse to his rider is the very foundation of all cavalry efficiency.” (Notes on the Evolution of Cavalry; by Lieutenant-Colonel F. N. Maude.) The training of remounts should therefore be undertaken with particular care.

Recruits.—The present system of training, where properly carried out, appears quite satisfactory in most respects. More instruction in the care of horses should be given, and particular attention paid to this point at all times.

Drill.—It should be remembered that smartness on parade and ceremonial movements are essential to discipline, and are not intended merely to please the eye of the drill sergeant or the spectator. It has been pointed out that the Boers have been able to offer a stubborn resistance, without having had any drill. But the natural fighting instincts of the savage, developed in the dwellers of the veldt by their mode of life, which have enabled them to substitute individuality for drill, are not present under the existing conditions of European or oriental civilization. Hence drill and discipline must be maintained to compensate for the absence of those natural qualifications for war.

Musketry.—Under modern conditions fire-action of cavalry has gained increased importance, and this important branch of training calls therefore for special attention. The course laid down in the musketry regulations appears to provide for all that is necessary. The tactical portion of it should be varied, and adapted to all the various conditions of war.

Scouting.—To see without being seen is the first rule for the scout. Information in war is of the first importance. On its correctness or otherwise may depend the issue of a battle, or even of a campaign. It follows that training in scouting calls for as much attention in the cavalry soldier as anything else, and in nothing is individuality more requisite. Training should take the direction of sharpening the powers of observation, and teaching the soldier how to find his way about a strange country. It may well be carried out on the lines recommended in General Baden-Powell's book on the subject. The instincts of cunning and observation, common to savage men and savage beasts, latent in most men, require development, and for this purpose India offers great facilities, abounding as it does in every variety of physical features, and containing a large quantity of game, in whose pursuit the scout would become accustomed to the rôle required of him in war. I would strongly advocate the selection and establishment of a certain number of scouts in each troop, who might be taken out, by officers addicted to such sport, on shikar expeditions, and who would be chosen for their physical and moral qualifications, their intelligence and individuality. Those who showed any aptitude for it might be well put through a more advanced course of training in reconnaissance work.

Manœuvres—These should be extended both in duration and in area of operations. Practice in the strategical rôle should be obtained by the contending forces commencing operations at a considerable distance from one another. Cavalry camps are useful, but as cavalry is an auxiliary arm, surely combined manœuvres of all arms are more instructive, both to the cavalry and the arms with which it acts in combination.

Officers.—Of all arms cavalry demands the highest qualities of decision of character, an eye for country, and a knowledge of the art of war in its leaders.

The drill-book lays down sufficient data for instructions in drill, reconnaissance, minor tactics, etc., of all ranks. But it appears desirable that there should be a wider study on the part of officers of the art of war, and of history, from which examples can be drawn for guidance under most circumstances, if the lessons learnt are applied intelligently with a view to the circumstances of the moment. Cavalry officers should also be fully acquainted with the rôle of the other arms, so as to be able to render them assistance in attaining the general object on the day of battle, and not merely, as they are so prone to do, fight an independent action on their own account.

Training in the issue of orders is especially required, for on their clearness and precision depends in great measure the successful execution of tactical problems,

THE RÔLE OF MOUNTED INFANTRY IN WAR.

General remarks.—It did not need the experiences of our most recent war to prove the great value of mounted infantry. Those who had studied military history and who were able to apply the lessons to be learnt therefrom were fully aware that such mobile infantry would prove of inestimable value in future wars. Nor is it a recent invention. When the Duke of Cumberland was following Prince Charles Edward in his retreat from Derby in 1745, 1,000 infantry were mounted to accompany the advanced guard of the pursuing force. Again, a historian of the Maratha war of 1817 tells us that "General Smith, during his pursuit of Bajirao, formed one of the Bombay Native Corps into a light corps, and mounting them on small horses, managed to keep always at hand with the cavalry a body of infantry in the event of overtaking the enemy. This system might in India be much improved upon, particularly in desultory warfare, such as with the Pindharis." This was written in 1820. History repeats itself, and we see now eight decades later how such a historical lesson might have been usefully applied in South Africa from the commencement of the war, instead of its having to be learnt again from bitter experience.

The duties of mounted infantry involve a strategic and a tactical rôle, in considering which (and its training and equipment) care must be taken that it is not made to usurp the functions of cavalry. It must be borne in mind that it is merely mobile infantry, and that its horses are only a means of locomotion. Mobility is the great *desideratum* of war. Its possession enables us to fulfil the requirements of the primary principle of placing a superior force at the decisive point and moment.

STRATEGIC RÔLE OF MOUNTED INFANTRY.

The rôle of mounted infantry on the theatre of war would appear to be primarily to provide a support for cavalry, the reconnoitring arm, to combine with the latter in dealing with the hostile cavalry, and to enable it to push on from successive strategic points as they are occupied in turn, thus forming a pivot for further advance. In fact, with the cavalry, it may form a strategic advanced guard to the army, and can relieve the cavalry of the duty of the occupation of strategic points in front of the advance or in the line of retirement. Its nature as infantry will enable it to perform this duty more effectively, whilst the cavalry is thus set free for action against that of the enemy, and for the fulfilment of its reconnoitring and screening duties.

Mounted infantry can also be of great service in moving rapidly to points on the theatre of operations, thus drawing off portions of the hostile forces, and deceiving the enemy by the rapidity of its movements, which will enable it to retire with celerity, and to simulate, by skilful manœuvring, a much larger force; or to rapidly reinforce threatened points on the strategical area of operation.

It would doubtless also be found useful for carrying out raids in the manner and with the objects already described, either alone or in

conjunction with cavalry, according to circumstances such as the nature of the enemy, his possession or otherwise of cavalry, and the nature of the country.

Similarly, in the strategic pursuit or retreat it can support the cavalry in the rôle already described under the heading for that a.m.

TACTICAL RÔLE OF MOUNTED INFANTRY.

The tactical rôle of mounted infantry includes—

- (1) action on the field of battle ;
- (2) detached duties ; advanced and rear guards ; outposts ; escort to guns and convoys ; raids ; ambuscades and foraging ; whilst, in the absence of cavalry, in savage warfare, or in country unsuited to cavalry action, it may have to undertake reconnoitring duties.

On the field of battle.—Mounted infantry will fight always on foot, making use of its mobility to seize positions of vantage or to reinforce threatened points on the field of battle ; to turn the enemy's flanks or act against his rear ; to cover the advance of infantry or protect it during retirement ; whilst it might at times be useful to confirm any success gained by the onslaught of cavalry, to which it will form a mobile support. In the pursuit it will act as a support to the cavalry, supplementing with fire the shock tactics of that arm. In the retreat it will aid in covering the withdrawal of the army.

Under all these circumstances mobility should be made use of for action against the enemy's flanks, a rôle which the slower moving arm can seldom accomplish, and which will probably be especially effectual in savage or oriental warfare. Its mobility, moreover, will enable mounted infantry to be held in reserve, until the moment when its services are required, under cover from view and fire of the enemy.

Detached duties—In detached duties the mounted infantry may relieve the cavalry of such services as the escort of guns, and take their place or supplement them in escorting convoys.

For forming ambuscades it should prove of special value, its mobility enabling it to retreat rapidly if necessary after inflicting all possible loss on the enemy.

Advanced and rear guard outposts, etc.—Attached to columns of infantry, it would furnish the vanguard of the advanced guard, or the rear portion of the rearguard ; on the line of march the mounted infantry would picquet any ground commanding the route until the columns have passed, a duty to which its mobility renders it peculiarly adapted.

In rear guard actions it would be used for covering the retirement of the slow moving infantry. It will also be useful in guarding lines of communication, its mobility enabling it to occupy a larger distance than a similar number of foot-soldiers, and so to economise the expenditure of troops.

It will furnish mounted patrols on outpost duty, and cover the retirement of infantry outposts.

Cyclists.—Cyclist infantry may here be mentioned. They would be useful in suitable country with good road communications, both to relieve cavalry of orderly duties, and to undertake such functions of mounted infantry as the nature of the country admits; but it is at least doubtful if they would be of much service on any theatre of war in which the army in India is likely to be engaged.

Camel corps.—The value of camel corps has been proved in Egypt, and a "Dromedary Corps" was employed with success in the Maratha war of 1817 to 1820. Infantry mounted on camels might with advantage be added to the establishment of the regular army in India.

EQUIPMENT OF MOUNTED INFANTRY.

It is impossible to lay down full details with regard to the equipment for war of an army, as many of them depend on circumstances, such as climatic considerations. Some articles of equipment may, however, be discussed with advantage.

Mounts.—It may be taken that in our army in India, the best mounts for mounted infantry are horses not over 14·2 in height. With such small animals the men are able to mount and dismount quickly, whilst they are at the same time handy. Perhaps a proportion of camel corps would also be found serviceable.

Saddlery.—Saddles, and indeed all articles of equipment, should be as light as is compatible with strength and efficiency in other respects. The colonial pattern saddle would seem to be as good as any other. At the same time they must be sufficiently strong to bear the weight of a considerable amount of kit.

The bits should be stripped of all weighty and unnecessary adornment, such as brass bosses. Saddle-bags might be substituted for wallets, and would be more serviceable in every respect.

The place of the numnah might be taken by one or two blankets, thicker than the pattern at present in use.

Arms.—Each battalion should be equipped with two Vickers-Maxim guns, which are not only effective, but useful for ranging purposes. They should have also two or more Maxim guns.

The officers and men should be equipped with rifle and bayonet as in the infantry. The former slung across the back.

Accoutrements.—Metal fittings of all kinds, buttons, etc., should be of dull metal, preferably aluminium where it is serviceable. Every ounce of reduction in weight is a gain towards mobility.

Cartridges should be carried in leather handliers, with flaps to cover them; one might be worn across the body, and one round the waist.

It has been advocated that the steel chains worn with spurs should be substituted by leather straps. This would be a mistake as leather straps are liable to be quickly worn through on rough ground. Spurs are not necessary for most horses, and might be worn only with animals requiring their use.

The picketing chain formerly in use is better than a rope, which the horses may eat through.

Scouts should be provided with field-glasses, magnetic compass, and instruments necessary for reconnaissance.

Shooting boots with leather gaiters should be worn. The latter are better than putties for protecting the legs from injury by kicks, etc.

Clothing.—Clothing and necessities must be adapted to climatic conditions.

The best pattern greatcoat is the "Coat, warm, British," with a detachable waterproof cape, which will serve as a substitute for a ground sheet.

Transport.—The mobility of a corps will depend on that of its transport, which must be adapted to local circumstances. Where the country is suitable, light carts might be found serviceable. Elsewhere ponies, mules, or camels are best used as pack animals.

Portable canvas troughs should be provided. In British corps portable cooking apparatus would be required.

Field forge, veterinary and hospital establishments are provided for in the regulations, as well as other details of regimental and personal equipment.

TRAINING OF MOUNTED INFANTRY.

It may be assumed that men for mounted infantry will be selected from the ranks of infantry regiments, and will have been fully instructed in the rôle of foot soldiers. Hence it is only necessary to consider here their training after they have joined the mounted infantry.

The subjects that call for attention are equitation, stable management and care of horses, and tactics so far as they differ from those of infantry.

In the first place, it may be said that it is impossible to expect the fullest efficiency from mounted infantry, especially from a tactical point of view, unless they are organised and trained as regiments or battalions. But in that case care would have to be taken to avoid "dragooning" the men, and it would be advisable to officer them from the first with selected infantry and not with cavalry officers. It should be impressed upon all ranks that their horses (camels or bicycles) are merely means of locomotion, to enable them to carry out the rôle that has already been described.

Equitation.—Equitation should be carefully taught, with a view to teaching the men to mount and dismount rapidly, and to be able to ride sufficiently well to get across any ordinary country, whilst at the same time cavalry manœuvres on horse back are to be avoided as far as possible. The care of their mounts, whatever they may be, should also receive the greatest attention during the course of instruction, and at all times throughout the training. Men should be taught to dismount whenever possible, to save the power of their animals, and to loosen the girths and shift saddles when practicable.

INFANTRY IN INDIA, AND THEIR RESPECTIVE RÔLES IN WAR.

Use of arms.—Instruction in the use of rifle and bayonet would be continued in the same manner as in the infantry, and the musketry practices, or at least some of them, that are carried out off the range should take the form of tactical exercises in which the mobility of the mounted infantry would be brought into use, as, for instance, the sudden rush for and seizure of commanding ground at a distance, whence fire could be brought to bear on targets representing an advancing or retreating enemy. But it is inadvisable to lay down details for a rigid course of musketry, the practical portion of which should be constantly varied, as are the circumstances of war.

Drill.—The system of mounted and dismounted drill laid down in the authorised regulations appears to be sufficient. No formed body should ever move without being protected by scouts and the men should be taught to scatter rapidly.

Tactical training.—Drill is one of the foundation-stones of discipline, and while the latter is not relaxed, the individuality of the soldier should be developed as far as possible during tactical training.

He should be trained carefully in all the duties that have been described as the rôle of the arm to which he belongs. The tactics of infantry in attack and defence must be taught, together with such special duties as are involved in mounted work.

The men should be taught to find their way about the country to scatter and rendezvous again at certain places.

Detached duties; escorts to guns and convoys; duties on advanced and rear-guards; outposts, including mounted patrols, and scouting are all important subjects for training.

Scouting.—One of the most important duties of all mounted men is scouting, training for which may be carried out in the manner already recommended for cavalry. Men who exhibit special proficiency in this branch of their work should be selected and given particular attention in training to the number of eight or ten per company. These would be the permanent scouts of the battalion, and higher training in topography and other reconnaissance work might be given them.

Manceuvres.—Annual manœuvres should be taken advantage of to afford mounted infantry an opportunity of being trained in the strategical and tactical rôles in conjunction with the other arms, and especially with cavalry.

Training in this respect is most important, to enable the troops to fully realise the rôle they would have to undertake in time of war. The course of training should be adapted to the season of the year, range practices in musketry and such duties as involve less fatiguing work to men and horses being carried out during the hot weather.

HORSE BREEDING IN INDIA.

BY MAJOR GENERAL TYLER.

President of the Horse and Mule Breeding Commission of 1900.

General Sir John Watson is a high authority on all questions connected with horses and breeding, but there are views expressed in his recent article which are at variance with those of the Commission of which I was President, and of the evidence produced before it, and on those points I proceed to offer some remarks.

In 1891 the Commander-in-Chief (Lord Roberts) wrote that: "it was the mismanagement not the principle of the studs which was in fault for the horses were as good as he wished for." Sir John Watson differs, and says: "whether there was mismanagement or not, the real cause of the remounts running to such an inordinately high figure was that the mares from constant crossing with English blood had become infertile, and we therefore had to maintain an enormous number to produce the limited supply of good remounts which we did."

He also writes: "turning again to the question of fertility or infertility I find but little enquiry in the Commission's report on this all important question."

The following paragraphs in the Report refer to this point.

Paragraph 22.—Though there is no absolutely conclusive evidence that continuous breeding from Thoroughbred sires leads to delicacy and weakness in the stock, it is possible that such defects may manifest themselves in the future, and that it may become necessary to return to a stouter strain to refresh and invigorate the decaying race. It will be said of course that there will be no difficulty about this, and that it will be only necessary to increase the number of Arab sires; a simple remedy no doubt, were the supply of good ones unlimited. But the demand for true Arabs, already great, will probably increase in the future; one of the lessons of the South African war is that small and hardy horses are indispensable, and there is no breed better calculated than that of the Arab to produce such horses. Another contingency to be reckoned with is that through some unforeseen combination of circumstances the supply of Arabs may be cut off. Now, if either of these conditions were to arise, India possesses within herself the powers of regenerating a weakening race by the infusing of blood from the Native breeds, breeds which are as vigorous, hardy and type-true as the Arab.

Paragraph 68.—Before leaving this subject, the Commission would mention that in their opinion great care will have to be taken to prevent the studs becoming unproductive in the same way as the old ones. There in course of years, the mares became less and less fertile till the percentage of foalings dropped to one in four, and after considering a quantity of evidence received on this subject, the Commission have formed the conclusion that the too constant repetition of the thoroughbred cross may have led to this and that had a reversion been made for one generation only to the original blood, the failure might have been averted. For this reason the recommendations

about the small stud at Kathiawar are made. The Marwari or Kathiawari mares may prove to be exactly the cross required to regenerate and harden the stock and some years of crossing with the Thoroughbred.

I may say that there was no point on which evidence was more eagerly sought by the Commission. They also fully agreed with Mr. Roberts and wrote that they wished: "to add their opinion to those of many officers and other competent authorities who have contended that breeding in India need not and should not prove the disastrous failure it is frequently stated to have been."

Here are some extracts from the Report of General Troup's commission: which is dated 1869.

Paragraph 32. Poosah Depot.—The young fillies in the depot were so far as to be almost deformities, and this proved two great faults, viz., overfeeding and want of liberty. The fillies from 18 months old and upwards receive 6 lbs. of grain and 20 lbs. in straw, and from 14 lbs to 20 lbs of fresh grass, daily, and they were only allowed to run loose in the paddocks for two hours out of the twenty-four.

Paragraph 50. Saharanpore Depot.—The crowded state of the stables generally, and the great want of space observed between the animals seemed very objectionable. The young stock of all ages are tied by the head with an average space of 10 to 12 feet between them, and they are only allowed to be loose in the paddocks for two hours out of the twenty-four. The Committee believe this close confinement to be prejudicial and in many cases ruinous to young horses.

Paragraph 61. Saharanpore Depot.—The Committee are of opinion that the advantages of good blood, and excellency of food are more than counterbalanced by this most unnatural system of keeping a young horse tied up in a box and in a stable for 22 out of the 24 hours, and would strongly recommend that all the stables (with the exception of those for stallions and reserved colts) be converted into loose sheds, and that the whole of the young stock (except reserved colts) be allowed to be loose all day in the cold and all night in the hot season, in during the longest evenings. This is the very least amount of liberty that should be allowed to the stock, where practicable it would decidedly be preferable if they could be left loose all day except at feeding hours, and for inspection morning and evening. General Troup has fully advertised in 1851 on the want of liberty allowed to young stock.

These extracts go to show how "the inordinately high figure of remounts was run up; they point to the worst possible management, but have nothing to do with the infertility of the mares.

Paragraph 25. Karnal Depot.—The Stud-bred mares were generally very good, with the exceptions noted in the classification fit for the purpose. But the Commission could not understand why, with such a large field from which to choose, so great a number of bad and unsound animals of this class should have been kept for breeding, and expressly maintained to breed stallions. The same remark applies in a general way to all classes of mares in this stud, as the result must be the continual propagation of spavins, ring-bones, etc., a system which the Committee cannot but strongly condemn, and with this conviction the Committee is decidedly of opinion that the importance in breeding horses, that the parent stock should be sound and free from malformations.

Here again is an instance of gross mismanagement.

Paragraph 14.—There are in the breeding Districts of Karnal, Meerut and Buzur 1,815 brood mares, of which number the Committee inspected 1,472 and found them as follows:—

Good	...	...	...	...	717
Congenitally unsound	...	...	...	...	94
Bad	...	...	...	...	317
Total					1,408

Paragraph 15.—From the above it will be seen that nearly 15 per cent. are bad and totally unfit to breed from, but of these, a few were old mares which had been good, but are now totally worn out; and of the remainder nearly 35 per cent. were considered to be congenitally unfit from spavin, ring-bones etc., etc.

These extracts show that half the mares in these districts were unfit to breed from, but there is no mention of their infertility. Is it wonderful however that the supply of good remounts was limited? Sir John Watson writes that in the studs only one mare in four produced a foal; why then were not the three barren ones turned out? What can be worse management, and more wasteful and useless than to keep barren mares in a breeding stud?

Sir John Watson thinks the Hackney stallion has been unfairly condemned by the Commission; the point calls for no explanation from me, as the breed has been condemned by Government, and I may add by the horse owners and breeders of the whole of India. But he makes this remarkable statement:

"The hackney stallion may be trusted to get excellent remounts out of pure bred mares, but he cannot create an Anglo-Indian type of horse out of a line of mongrels, and should be used for first crosses only, to get remounts not brood stock."

But as the mares are all "mongrels" except those of the native breeds, whose owners will not use hackneys, where are mates for the hackneys to be found? Besides Government would certainly not consent to purchase stallions on the condition that they should be used for first crosses only.

He writes: "The Commission recommends that a stud be formed of 400 brood mares to make a start with, but the mares are to be drawn from different classes, no very specific recommendations are made as to their breeding: this will be left to the discretion of the Major-General, who will have some difficulty in ascertaining their pedigree"

He is of opinion in fact that a permanent breed of horses cannot be raised in India, though he admits that under the recommendations of the Commission: "excellent horses I think may be thus turned out from the stud, and perhaps be successful for a few years....."

Now how was the Arab breed itself raised? And how the native breeds? It cannot be supposed that they sprang in full perfection from the soil, and it is only reasonable to argue that they were slowly built up by judicious mating and careful selection in the same manner as the Commission propose to build up the "Crown" breed. The founders of those breeds must have met the same difficulties as will the "Major-General"; but they succeeded and so I believe will he, or rather his successors. As to the permanence of such a breed as the suggested "Crown" breed we have some hopeful evidence. The Stud at Poosah was established in 1794, Moorcroft was appointed Superintendent of it in 1808, and in 1813, after five years experience he writes: "though difficulties may attend diffusing a system of Horse-breeding it may be accomplished by vigorous exertion."

not embody as one of its main features the development of individual intelligence must be comparatively useless. At the same time it is most necessary to take care that discipline is in no wise slackened, for it is the greatest incentive to courage, and is the soul of the whole military system. The individuality of the Boers has enabled them to offer a stubborn resistance, and to obtain considerable success in minor tactical operations; but the want of that discipline which can exist only in a regular army has prevented them from undertaking those great combined offensive operations which can alone lead to any decisive success in war. The general subjects requiring treatment under this heading are broadly as follows:—

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| 3. Equestrianism. | 6. Manœuvre. |

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All these subjects do not call for particular notice here, as the elements of them are generally well provided for under the existing system.

It may be remarked, however, with regard to the care of horses, that more attention should be paid to it than has hitherto been the case, the men being instructed to dismount whenever possible on the march and elsewhere, and to attend to their animals' wants before looking after themselves. Less time should be given to drill, and more to manœuvre, to which the former is merely preparatory.

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Musketry.—Under modern conditions fire-action of cavalry has gained increased importance, and this important branch of training calls therefore for special attention. The course laid down in the musketry regulations appears to provide for all that is necessary. The tactical portion of it should be varied, and adapted to all the various conditions of war.

Scouting.—To see without being seen is the first rule for the scout. Information in war is of the first importance. On its correctness or otherwise may depend the issue of a battle, or even of a campaign. It follows that training in scouting calls for as much attention in the cavalry soldier as anything else, and in nothing is individuality more requisite. Training should take the direction of sharpening the powers of observation, and teaching the soldier how to find his way about a strange country. It may well be carried out on the lines recommended in General Baden-Powell's book on the subject. The instincts of cunning and observation, common to savage men and savage beasts, latent in most men, require development, and for this purpose India offers great facilities, abounding as it does in every variety of physical features, and containing a large quantity of game, in whose pursuit the scout would become accustomed to the rôle required of him in war. I would strongly advocate the selection and establishment of a certain number of scouts in each troop, who might be taken out, by officers addicted to such sport, on shikar expeditions, and who would be chosen for their physical and moral qualifications, their intelligence and individuality. Those who showed any aptitude for it might be well put through a more advanced course of training in reconnaissance work.

Manœuvres—These should be extended both in duration and in area of operations. Practice in the strategical rôle should be obtained by the contending forces commencing operations at a considerable distance from one another. Cavalry camps are useful, but as cavalry is an auxiliary arm, surely combined manœuvres of all arms are more instructive, both to the cavalry and the arms with which it acts in combination.

Officers.—Of all arms cavalry demands the highest qualities of decision of character, an eye for country, and a knowledge of the art of war in its leaders.

The drill-book lays down sufficient data for instructions in drill, reconnaissance, minor tactics, etc., of all ranks. But it appears desirable that there should be a wider study on the part of officers of the art of war, and of history, from which examples can be drawn for guidance under most circumstances, if the lessons learnt are applied intelligently with a view to the circumstances of the moment. Cavalry officers should also be fully acquainted with the rôle of the other arms, so as to be able to render them assistance in attaining the general object on the day of battle, and not merely, as they are so prone to do, fight an independent action on their own account.

Training in the issue of orders is especially required, for on their clearness and precision depends in great measure the successful execution of tactical problems,

THE RÔLE OF MOUNTED INFANTRY IN WAR.

General remarks.—It did not need the experiences of our most recent war to prove the great value of mounted infantry. Those who had studied military history and who were able to apply the lessons to be learnt therefrom were fully aware that such mobile infantry would prove of inestimable value in future wars. Nor is it a recent invention. When the Duke of Cumberland was following Prince Charles Edward in his retreat from Derby in 1745, 1,000 infantry were mounted to accompany the advanced guard of the pursuing force. Again, a historian of the Maratha war of 1817 tells us that "General Smith, during his pursuit of Baji Rao, formed one of the Bombay Native Corps into a light corps, and mounting them on small horses, managed to keep always at hand with the cavalry a body of infantry in the event of overtaking the enemy. This system might in India be much improved upon, particularly in desultory warfare, such as with the Pindharies." This was written in 1820. History repeats itself, and we see now eight decades later how such a historical lesson might have been usefully applied in South Africa from the commencement of the war, instead of its having to be learnt again from bitter experience.

The duties of mounted infantry involve a strategical and a tactical rôle, in considering which (and its training and equipment) care must be taken that it is not made to usurp the functions of cavalry. It must be borne in mind that it is merely mobile infantry, and that its horses are only a means of locomotion. Mobility is the great *desideratum* of war. Its possession enables us to fulfil the requirements of the primary principle of placing a superior force at the decisive point and moment.

STRATEGIC RÔLE OF MOUNTED INFANTRY.

The rôle of mounted infantry on the theatre of war would appear to be primarily to provide a support for cavalry, the reconnoitring arm, to combine with the latter in dealing with the hostile cavalry, and to enable it to push on from successive strategic points as they are occupied in turn, thus forming a pivot for further advance. In fact, with the cavalry, it may form a strategic advanced guard to the army, and can relieve the cavalry of the duty of the occupation of strategic points in front of the advance or in the line of retirement. Its nature as infantry will enable it to perform this duty more effectively, whilst the cavalry is thus set free for action against that of the enemy, and for the fulfilment of its reconnoitring and screening duties.

Mounted infantry can also be of great service in moving rapidly to points on the theatre of operations, thus drawing off portions of the hostile forces, and deceiving the enemy by the rapidity of its movements, which will enable it to retire with celerity, and to simulate, by skilful manœuvring, a much larger force; or to rapidly reinforce threatened points on the strategical area of operation.

It would doubtless also be found useful for carrying out raids, in the manner and with the objects already described, either alone or in

conjunction with cavalry, according to circumstances such as the nature of the enemy, his possession or otherwise of cavalry, and the nature of the country.

Similarly, in the strategic pursuit or retreat it can support the cavalry in the rôle already described under the heading for that arm.

TACTICAL RÔLE OF MOUNTED INFANTRY.

The tactical rôle of mounted infantry includes —

- (1) action on the field of battle ;
- (2) detached duties ; advanced and rear guards ; outposts ; escort to guns and convoys ; raids ; ambuscades and foraging ; whilst, in the absence of cavalry, in savage warfare, or in country unsuited to cavalry action, it may have to undertake reconnoitring duties.

On the field of battle.—Mounted infantry will fight always on foot, making use of its mobility to seize positions of vantage or to reinforce threatened points on the field of battle ; to turn the enemy's flanks or act against his rear ; to cover the advance of infantry or protect it during retirement ; whilst it might at times be useful to confirm any success gained by the onslaught of cavalry, to which it will form a mobile support. In the pursuit it will act as a support to the cavalry, supplementing with fire the shock tactics of that arm. In the retreat it will aid in covering the withdrawal of the army.

Under all these circumstances mobility should be made use of for action against the enemy's flanks, a rôle which the slower moving arm can seldom accomplish, and which will probably be especially effectual in savage or oriental warfare. Its mobility, moreover, will enable mounted infantry to be held in reserve, until the moment when its services are required, under cover from view and fire of the enemy.

Detached duties—In detached duties the mounted infantry may relieve the cavalry of such services as the escort of guns, and take their place or supplement them in escorting convoys.

For forming ambuscades it should prove of special value, its mobility enabling it to retreat rapidly if necessary after inflicting all possible loss on the enemy.

Advanced and rear guard outposts, etc.—Attached to columns of infantry, it would furnish the vanguard of the advanced guard, or the rear portion of the rear guard ; on the line of march the mounted infantry would picquet any ground commanding the route until the columns have passed, a duty to which its mobility renders it peculiarly adapted.

In rear guard actions it would be used for covering the retirement of the slow moving infantry. It will also be useful in guarding lines of communication, its mobility enabling it to occupy a larger distance than a similar number of foot-soldiers, and so to economise the expenditure of troops.

It will furnish mounted patrols on outpost duty, and cover the retirement of infantry outposts.

Cyclists.—Cyclist infantry may here be mentioned. They would be useful in suitable country with good road communications, both to relieve cavalry of orderly duties, and to undertake such functions of mounted infantry as the nature of the country admits; but it is at least doubtful if they would be of much service on any theatre of war in which the army in India is likely to be engaged.

Camel corps.—The value of camel corps has been proved in Egypt, and a "Dromedary Corps" was employed with success in the Maratha war of 1817 to 1820. Infantry mounted on camels might with advantage be added to the establishment of the regular army in India.

EQUIPMENT OF MOUNTED INFANTRY.

It is impossible to lay down full details with regard to the equipment for war of an army, as many of them depend on circumstances, such as climatic considerations. Some articles of equipment may, however, be discussed with advantage.

Mounts.—It may be taken that in our army in India, the best mounts for mounted infantry are horses not over 14-2 in height. With such small animals the men are able to mount and dismount quickly, whilst they are at the same time handy. Perhaps a proportion of camel corps would also be found serviceable.

Saddlery.—Saddles, and indeed all articles of equipment, should be as light as is compatible with strength and efficiency in other respects. The colonial pattern saddle would seem to be as good as any other. At the same time they must be sufficiently strong to bear the weight of a considerable amount of kit.

The bits should be stripped of all weighty and unnecessary adornment, such as brass bosses. Saddle-bags might be substituted for wallets, and would be more servicable in every respect.

The place of the numnah might be taken by one or two blankets, thicker than the pattern at present in use.

Arms.—Each battalion should be equipped with two Vickers-Maxim guns, which are not only effective, but useful for ranging purposes. They should have also two or more Maxim guns.

The officers and men should be equipped with rifle and bayonet as in the infantry. The former slung across the back.

Accoutrements.—Metal fittings of all kinds, buttons, etc., should be of dull metal, preferably aluminium where it is serviceable. Every ounce of reduction in weight is a gain towards mobility.

Cartridges should be carried in leather bandoliers, with flaps to cover them; one might be worn across the body, and one round the waist.

It has been advocated that the steel chains worn with spurs should be substituted by leather straps. This would be a mistake as leather straps are liable to be quickly worn through on rocky ground. Spurs are not necessary for most horses, and might be worn only with animals requiring their use.

The picketing chain formerly in use is better than a rope, which the horses may eat through.

Scouts should be provided with field-glasses, magnetic compass, and instruments necessary for reconnaissance.

Shooting boots with leather gaiters should be worn. The latter are better than putties for protecting the legs from injury by kicks, etc.

Clothing.—Clothing and necessities must be adapted to climatic conditions.

The best pattern greatcoat is the "Coat, warm, British," with a detachable waterproof cape, which will serve as a substitute for a ground sheet.

Transport.—The mobility of a corps will depend on that of its transport, which must be adapted to local circumstances. Where the country is suitable, light carts might be found serviceable. Elsewhere ponies, mules, or camels are best used as pack animals.

Portable canvas troughs should be provided. In British corps portable cooking apparatus would be required.

Field forge, veterinary and hospital establishments are provided for in the regulations, as well as other details of regimental and personal equipment.

TRAINING OF MOUNTED INFANTRY.

It may be assumed that men for mounted infantry will be selected from the ranks of infantry regiments, and will have been fully instructed in the rôle of foot soldiers. Hence it is only necessary to consider here their training after they have joined the mounted infantry.

The subjects that call for attention are equitation, stable management and care of horses, and tactics so far as they differ from those of infantry.

In the first place, it may be said that it is impossible to expect the fullest efficiency from mounted infantry, especially from a tactical point of view, unless they are organised and trained as regiments or battalions. But in that case care would have to be taken to avoid "dragooning" the men, and it would be advisable to officer them from the first with selected infantry and not with cavalry officers. It should be impressed upon all ranks that their horses (camels or bicycles) are merely means of locomotion, to enable them to carry out the rôle that has already been described.

Equitation.—Equitation should be carefully taught, with a view to teaching the men to mount and dismount rapidly, and to be able to ride sufficiently well to get across any ordinary country, whilst at the same time cavalry manœuvres on horse back are to be avoided as far as possible. The care of their mounts, whatever they may be, should also receive the greatest attention during the course of instruction, and at all times throughout the training. Men should be taught to dismount whenever possible, to save the power of their animals, and to loosen the girths and shift saddles when practicable.

INFANTRY IN INDIA, AND THEIR RESPECTIVE RÔLES IN WAR.

Use of arms.—Instruction in the use of rifle and bayonet would be continued in the same manner as in the infantry, and the musketry practices, or at least some of them, that are carried out off the range should take the form of tactical exercises in which the mobility of the mounted infantry would be brought into use, as, for instance, the sudden rush for and seizure of commanding ground at a distance, whence fire could be brought to bear on targets representing an advancing or retreating enemy. But it is inadvisable to lay down details for a rigid course of musketry, the practical portion of which should be constantly varied, as are the circumstances of war.

Drill.—The system of mounted and dismounted drill laid down in the authorised regulations appears to be sufficient. No formed body should ever move without being protected by scouts and the men should be taught to scatter rapidly.

Tactical training.—Drill is one of the foundation-stones of discipline, and while the latter is not relaxed, the individuality of the soldier should be developed as far as possible during tactical training.

He should be trained carefully in all the duties that have been described as the rôle of the arm to which he belongs. The tactics of infantry in attack and defence must be taught, together with such special duties as are involved in mounted work.

The men should be taught to find their way about the country to scatter and rendezvous again at certain places.

Detached duties; escorts to guns and convoys; duties on advanced and rear-guards; outposts, including mounted patrols, and scouting are all important subjects for training.

Scouting.—One of the most important duties of all mounted men is scouting, training for which may be carried out in the manner already recommended for cavalry. Men who exhibit special proficiency in this branch of their work should be selected and given particular attention in training to the number of eight or ten per company. These would be the permanent scouts of the battalion, and higher training in topography and other reconnaissance work might be given them.

Manœuvres.—Annual manœuvres should be taken advantage of to afford mounted infantry an opportunity of being trained in their strategical and tactical rôles in conjunction with the other arms, and especially with cavalry.

Training in this respect is most important, to enable the troops to fully realise the rôle they would have to undertake in time of war. The course of training should be adapted to the season of the year, range practices in musketry and such duties as involve less fatiguing work to men and horses being carried out during the hot weather.

HORSE BREEDING IN INDIA.

BY MAJOR GENERAL TYLER.

President of the Horse and Mule Breeding Commission of 1900.

General Sir John Watson is a high authority on all questions connected with horses and breeding, but there are views expressed in his recent article which are at variance with those of the Commission of which I was President, and of the evidence produced before it, and on those points I proceed to offer some remarks.

In 1891 the Commander-in-Chief (Lord Roberts) wrote that: "it was the mismanagement not the principle of the studs which was in fault for the horses were as good as he wished for." Sir John Watson differs, and says: "whether there was mismanagement or not, the real cause of the remounts running to such an inordinately high figure was that the mares from constant crossing with English blood had become infertile, and we therefore had to maintain an enormous number to produce the limited supply of good remounts which we did."

He also writes: "turning again to the question of fertility or infertility I find but little enquiry in the Commission's report on this all important question."

The following paragraphs in the Report refer to this point.

Paragraph 22.—Though there is no absolutely conclusive evidence that continuous breeding from Thoroughbred sires leads to delicacy and weakness in the stock, it is possible that such defects may manifest themselves in the future, and that it may become necessary to return to a stouter strain to refresh and invigorate the decaying race. It will be said of course that there will be no difficulty about this, and that it will be only necessary to increase the number of Arab sires; a simple remedy no doubt, were the supply of good ones unlimited. But the demand for true Arabs, already great, will probably increase in the future; one of the lessons of the South African war is that small and hardy horses are indispensable, and there is no breed better calculated than that of the Arab to produce such horses. Another contingency to be reckoned with is that through some unforeseen combination of circumstances the supply of Arabs may be cut off. Now, if either of these conditions were to arise, India possesses within herself the powers of regenerating a weakening race by the infusing of blood from the Native breeds, breeds which are as vigorous, hardy and type-true as the Arab.

Paragraph 68.—Before leaving this subject, the Commission would mention that in their opinion great care will have to be taken to prevent the studs becoming unproductive in the same way as the old ones. There in course of years, the mares became less and less fertile till the percentage of foalings dropped to one in four, and after considering a quantity of evidence received on this subject, the Commission have formed the conclusion that the too constant repetition of the thoroughbred cross may have led to this and that had a reversion been made for one generation only to the original blood, the failure might have been averted. For this reason the recommendations

about the small stud at Kathiawar are made. The Marwari or Kathiawari stallions may prove to be exactly the cross required to regenerate and harden the stock after some years of crossing with the Thoroughbred.

I may say that there was no point on which evidence was more eagerly sought by the Commission. They also fully agreed with Lord Roberts and wrote that they wished: "to add their opinion to those of many officers and other competent authorities who have contended that breeding in India need not and should not prove the disastrous failure it is frequently stated to have been."

Here are some extracts from the Report of General Troup's commission: which is dated 1869.

Paragraph 32. Poosah Depôt.—The young fillies in the depôt were so fat as to be almost deformities, and this proved two great faults, viz., over-feeding, and want of liberty. The fillies from 18 months old and upwards receive 6lbs of grain, 8 lbs of oats in straw, and from 14 lbs to 20 lbs of fresh grass, daily, and they were only allowed to run loose in the paddocks for two hours out of the twenty-four.

Paragraph 59. Saharanpore Depôt.—The crowded state of the stables generally, and the great want of space observed between the animals, seemed very objectionable. The young stock of all ages are tied by the head with an average space of only four feet between them, and they are only allowed to be loose in the paddocks for two hours out of the twenty-four. The Committee believe this close confinement to be prejudicial and in many cases ruinous to young horses.

Paragraph 61. Saharanpore Depôt.—The Committee are of opinion that all the advantages of good blood, and excellency of food are more than counterbalanced by this most unnatural system of keeping a young horse tied up in a hot and crowded stable for 22 out of the 24 hours, and would strongly recommend that all the stables (with the exception of those for stallions, and reserved colts) be converted into open sheds, and that the whole of the young stock (except reserved colts) be allowed to run loose all day in the cold, and all night in the hot season, including the mornings and evenings. This is the very least amount of liberty that should be allowed to them, but where practicable it would decidedly be preferable if they could be left loose altogether, except at feeding hours, and for inspection morning and evening. General Gilbert strongly animadverted in 1851 on the want of liberty allowed to young stock.

These extracts go to show how "the inordinately high figure" of remounts was run up; they point to the worst possible management, but have nothing to do with the infertility of the mares.

Paragraph 25. Karnal Depôt.—The Stud-bred mares were generally very good, and, with the exceptions noted in the classification, fit for the purpose. But the Committee could not understand why, with such a large field from which to choose, so great a number of bad and unsound animals of this class should have been kept for brood in a Stud expressly maintained to breed stallions. The same remark applies in a lesser degree to all classes of mares in this stud, as the result must be the continual propagation of spavins, ring-bones, etc; a system which the Committee cannot too strongly condemn and with this conviction the Committee is decidedly of opinion that it is of primary importance in breeding horses, that the parent stock should be sound and free from malformations.

Here again is an instance of gross mismanagement.

Paragraph 14.—There are in the breeding Districts of Kurruntadhee and Buzar 1,815 brood mares, of which number the Committee inspected 1,462 and classed them as follows:—

Good	...	...	...	...	...	737
Congenitally unfit	...	...	...	...	...	508
Bad	...	...	...	...	...	217
Total						1,462

Paragraph 15.—From the above it will be seen that nearly 15 per cent. are bad and totally unfit to breed from, but of these, a few were old mares which had been good, but are now totally worn out; and of the remainder nearly 35 per cent. were considered to be congenitally unfit from spavin, ring-bones etc., etc.

These extracts show that half the mares in these districts were unfit to breed from, but there is no mention of their infertility. Is it wonderful however that the supply of good remounts was limited? Sir John Watson writes that in the studs only one mare in four produced a foal; why then were not the three barren ones turned out? What can be worse management, and more wasteful and useless than to keep barren mares in a breeding stud?

Sir John Watson thinks the Hackney stallion has been unfairly condemned by the Commission; the point calls for no explanation from me, as the breed has been condemned by Government, and I may add by the horse owners and breeders of the whole of India. But he makes this remarkable statement:

"The hackney stallion may be trusted to get excellent remounts out of pure bred mares, but he cannot create an Anglo-Indian type of horse out of a line of mongrels, and should be used for first crosses only, to get remounts not brood stock."

But as the mares are all "mongrels" except those of the native breeds, whose owners will not use hackneys, where are mates for the hackneys to be found? Besides Government would certainly not consent to purchase stallions on the condition that they should be used for first crosses only.

He writes: "The Commission recommends that a stud be formed of 400 brood mares to make a start with, but the mares are to be drawn from different classes, no very specific recommendations are made as to their breeding: this will be left to the discretion of the Major-General, who will have some difficulty in ascertaining their pedigree"

He is of opinion in fact that a permanent breed of horses cannot be raised in India, though he admits that under the recommendations of the Commission: "excellent horses I think may be thus turned out from the stud, and perhaps be successful for a few years....."

Now how was the Arab breed itself raised? And how the native breeds? It cannot be supposed that they sprang in full perfection from the soil, and it is only reasonable to argue that they were slowly built up by judicious mating and careful selection in the same manner as the Commission propose to build up the "Crown" breed. The founders of those breeds must have met the same difficulties as will the "Major-General"; but they succeeded and so I believe will he, or rather his successors. As to the permanence of such a breed as the suggested "Crown" breed we have some hopeful evidence. The Stud at Poosah was established in 1794, Moorcroft was appointed Superintendent of it in 1808, and in 1813, after five years experience he writes: "though difficulties may attend diffusing a system of Horse-breeding it may be accomplished by vigorous exertion."

Poosah seems to have been unhealthy, and by no means a good place for a breeding stud, but the stud system may, I presume, be taken as having been continuous from 1813 until its abolition in 1866, a period of 53 years. When the studs were broken up the mares were sold, and a portion only of them can be traced; General Parrott bought a number of them, and the 11th (Prince of Wales' Own) Bengal Lancers, with foresight and wisdom, purchased any of the stud mares which were available for their own stud of Probynabad. Their records show that :—

In 1866 they bought	9	stud bred mares.
„ 1867 „ „	5	„ „ „
„ 1868 „ „	16	„ „ „
„ 1870 „ „	14	„ „ „
„ 1892 „ „	33	of General Parrott's mares.

The Commission visited Probynabad, and remarked on it thus.

“The produce of these mares shows three or four crosses of selected Arab or thoroughbred blood, and the remounts thus obtained are hardy and of an excellent type the almost unvarying type which seems to prevail among the stock proves that by the intelligent use of highly bred Arab, and suitable Thoroughbred sires, horses of the best class for Indian remounts can be almost unfailingly produced.” The mares are still prolific, and as I can bear testimony, are very fine well made animals, showing no symptom whatever of degeneration. As this opinion was formed 87 years after the establishment of the studs, I think that Sir John Watson's assertion “that there will be no permanence in their blood” requires stronger evidence than he has adduced.

It is said by the breeders in the Bhima Valley of the Deccan that their breed is descended from the mares of the Aligaon stud after it was broken up in 1843; this seems probable, but there is no documentary evidence in support of the statement. Continuous breeding under present conditions has however been in progress since 1862, and the breed may fairly be called Anglo Indian. An incident has occurred at the Ahmednagar Dépôt in which some mares of the Bhima Valley are concerned, and which throws a significant side light on the recommendations of the Commission. In the spring of 1900 a colt—who was in such poor condition that the dépôt authorities had deferred his castration until he had picked up health and strength—while running with the young stock, covered some of the fillies, though on the 10th of April in that year he was only one year and seven months old. The result was six foals of whom Major Broome (the Superintendent of the Dépôt) writes :

“The colt that sired them was bred at Bhavnagar, he is three quarters Arab, being by Jebel Shammer (Arab) out of a Bhavnagar stud-bred mare by Lachin (Arab); the six fillies were bred in the Bhima district, and are all by known Thoroughbred English Stallions, with

"probably one or more strains of Arab blood on the dam's side, and therefore I think little or no exception can be taken on the score of blood to the use of these colts hereafter for stallion purposes if, when matured they are justified for such use by their make, shape, and action." One of these, he says, is not likely to develop into a remount, but the other five give great promise: "Indeed such a high opinion have I formed of four of them that I have not had them castrated, thinking it more than likely that they may develop into stock suitable for use as Country-Bred Stallions. Two of the four are extremely like the sire, which looks as if he had the power of stamping his stock; he is a nice symmetrical colt." These are the words of one of the best judges of young stock in India. They may not be classed as evidence, but it will be agreed that they afford encouragement to those who favour the use of stud-bred stallions, and who have faith in the vigour of an Anglo-Indian breed.

Sir John Watson has no opinion of the English horse, "whose blood is not intended by nature to mingle with any *permanent* advantage, with that of the Asiatic mare. English blood has never done so with any other class of animal." I have not the time to enter fully into this somewhat astonishing statement, but I would point out that the famous Messenger, Shark, and Tally-ho, all English horses were the "Fathers of the American Turf"; that the foundations of the thorough-bred studs in France, Germany, and Austria were of English blood: that all Australian and New Zealand horses are of English origin: that when at home last year, I met some Argentine breeders who told me that they bought all their stallions in England; and that, to come nearer home, the best specimens of the Indian Country-bred seen by the Commission were by English sires; a few of them were photographed and will be found in the report of the Commission; better remounts from every point of view can hardly be imagined. Sir John Watson in describing the Thorough-bred English horse required for India says: "All writers agree he should not be more than 15-2 in height.....I quite agree with those writers, but such horses are not bred in England There are exceptions of course."

Out of 70 Thoroughbred English stallions inspected by the Commission 32 were 15-2 and under; of them 15 were classed as "very good" and 13 as "good". As all these must have been purchased by him, the exceptions must be fairly numerous. With regard to the English horse the Commission are strongly opposed to the opinion of Sir John Watson. Moorcroft, whose high authority he recognises, writes of the stallions in the stud:—

"Thorough-bred horses which are strong, handsome, and have gained great celebrity on the Turf in England, soon repay their original cost in this country." He was evidently no opponent of the English horse.

The question of the establishment of Government studs to encourage the revival of Native breeds was fully discussed by the Com-

mission, who came to the conclusion that the Kathiawari and Marwari breeds were the ones which most required impulse and encouragement but that it would be impossible to purchase true bred animals except in very small numbers, partly on account of the decrease in the breeds, partly because of the reluctance of the natives to part with their mares. We considered therefore that it would be sufficient for Government to show they were in sympathy with the endeavour to revive these valuable breeds by maintaining a small stud, and that the Chiefs and Zemindars might be trusted to do the rest. Breeding in Baluchistan proceeds prosperously, and with judicious advice and superintendence on the part of the officials of the Stud Department, it should flourish without further expenditure on the part of Government. Of the Unmool breed there are very few specimens, and these are in the hands of two or three Maliks; none could be purchased, and nothing can be done for them except to afford their owners every encouragement in reviving the breed. The Sindhi breed exists in considerable numbers but the natives refuse to cross any imported horses with their own mares; the Commission considered it unnecessary for Government to incur any expenditure on this breed, except by encouraging the owners to breed mules, to which it is said they have no objection. With regard to the Bhima breed of the Deccan, the Commission considered that any attempt to raise a Government Stud might prove discouraging to the small number of breeders who exist in the limited area available, but if the Stud Department became convinced that a small stud similar to that proposed for Khatiawar would be advisable, it might be established.

The Commission could discover no distinct breeds other than those I have mentioned; but some of these are divided into numerous families, which we considered need not be separately treated. If however at any future period it is found expedient to foster any special breed or family, it will be easy to set apart a section of the Stallion Stud for the purpose.

Sir John Watson regards the proposals of the Commission to establish a stallion stud, with small favour; he thinks that no confidence can be placed in such a scheme. But in the Report of of General Troup's Commission I find the following recommendations.

Paragraph 37.—The Committee consider, from what they have seen, that thickset Stud-bred stallions are, as a general rule, the best class of horse to get good remounts for the Army, and as the great paucity of this class was most apparent, it is believed that a stallion breeding farm should be kept up at any reasonable cost, but taking into consideration that if the parent stock are well selected, sound, and judiciously managed the majority of the colts and fillies not quite fit for breeding purposes will make first class remounts, no reason is apparent why this Stud should be an expensive one.

Paragraph 38.—Any Stud of this description must entail a certain amount of monthly expenditure for officers' salaries, but this item will be much the same whether the Stud be on a large or small scale, if on the latter, the cost will have to be put on a few colts and fillies, making them high-priced, therefore, as the description of stallion that ought to be bred is much required to make it efficient for the purpose and able to supply horses at a moderate cost such a Stud should not consist of less than four hundred mares with a due proportion of stallions.

Paragraph 39.—The mares should consist of all the good English, Waler, and stud-bred mares now at Kurnal, as many good and sound country mares of bone and substance as can be bought, and completed by the pick of the Government mares in the district, the greatest care being in all cases taken that no unsound or malformed animal whether stallion or mare, be ever selected.

Paragraph 47.—The stallion farm has now been dwelt upon at considerable length, as the subject is deemed a most important one, horses such as it ought to supply being so much required all over the breeding districts, and they are more likely to produce remounts and improve the breed of the country than other description of horse, and can be, the Committee feels confident, supplied at a less cost.

These extracts coincide almost exactly with the proposals of the Commission of 1900.

He writes : " The Commission refer to two Stud-bred Stallions "bred by General Parrott, Young Egotist and Young Grendon, and "take them as an example of what can be bred in India under good "management ; there is no doubt of this, but I do not think either of "these horses have any strain of Indian blood in them." Young Egotist was by Egotist out of Memento a Stud-bred mare. Young Grendon was by Grendon out of Rosetta a Stud-bred mare. Patanchori, another Stud-bred stallion, was by Egotist out of Constance a Stud-bred mare.

He does not notice what are the most important recommendations of the Commission; the establishment of a " Controlled System of breeding on Grants of Land on Canals "; and of " Young Stock Runs." In five or six years, if these proposals are accepted, nearly the whole of the 8,000 grants mentioned in the report will have been allotted, and a considerable portion of the 8,000 mares will have been purchased ; these mares will have been approved by the Stud Department and will be watched and superintended by its officials, while Government will possess the right of pre-emption of the young stock up to the age of twelve months. The experiment of making grants on service conditions has already proved a success in the Chenab Colony in the case of camel breeders, and the Commission pointed out that there are several extension schemes in prospect, and that the principle ought to be adopted in other Canal Colonies.

The Young Stock Runs, as recommended by the Commission, will consist of two large plots of ground for the reception of the young stock bred in the Colony or purchased elsewhere. Each plot will contain an area of 5,000 acres of arable, and a similar area of waste land ; each will hold about 3,000 head of young stock, which will have ample space in which to roam about, and develop under natural conditions.

Sir John Watson has apparently overlooked the valuable asset of highly bred Australian mares possessed by Government, and the assistance they will render when the stallion studs are established. The shippers informed the Commission, as can be seen in the Report that India is receiving : " most of the best mares, breeders being tempted to sell on account of the high prices given for Indian remounts." When inspecting batteries and depôts, I see many beautiful young mares, some " book " thoroughbred, and others apparently so ; though in " up country stations," breeders do not go to the trouble of registering their blood stock. And there are other mares so nearly thoroughbred that they might be bred from with a certainty of producing type true foals. General Troup's Commission in recommending a stallion stud placed a high value on Australian mares for the purpose of producing

stud-bred stallions. In this opinion I fully agree, and I also believe the cross between the Arab and the wellbred Australian mare will produce valuable remounts. And it should be borne in mind that the Australians now imported are greatly superior to those of thirty years ago.

In reviewing Sir John Watson's article as a whole I cannot but think that he takes an unduly gloomy view of Horse breeding in India and that he believes the errors I think attributable to bad management and constant and ill-considered changes of policy, must be laid at the door of principle. He also hints that the Commission of 1900 have, in his opinion, done little or nothing towards setting matters on a more satisfactory footing. The Commission on the other hand take a hopeful view of the situation, and believe, if their recommendations are accepted (especially those regarding the Controlled System of breeding in Canal Colonies) that Government will, within a period which may be termed short when reckoning with the history of a nation find themselves in a position to produce horse and donkey stallion of their own breeding, to secure an abundant supply of the best horses and mules for their own requirements at a moderate cost without interfering with trade, and to open up a large and profitable industry for India, enabling her to take a high place among the horse and mule producing countries of the world.

"SWORD, LANCE OR BOTH IN THE NATIVE CAVALRY."

"BY TULWAR"

The vexed question of the arms of the Lancer for mounted action has not yet been definitely decided on. As regards Native Lancers the order has issued, that swords are not to be worn on parades. At the same time, the authorities seem chary of taking so final a step, as ordering their total withdrawal. The necessity or otherwise of this step, depends on whether the carrying of the sword is a greater advantage or a greater handicap. Some decision will be reached, if the different enemies, which the Native Cavalry are likely to meet, are taken in review, and each case judged on its own merits.

Humanly speaking, as in the past so in the future, their constant foes will be semi-disorganised crowds of footmen, perhaps plainsmen, perhaps mountaineers. The experience of our last campaign but one, has shewn, that the mounted cavalry man will still get his opportunities against them, and has proved the lance to be the weapon, and to be quite sufficient. In the charge by the 1st Punjab Cavalry at Wana, the whole of the casualties are said to have been inflicted by the Non-commissioned officers. The 1st Punjab Cavalry was a Sabre Regiment, but its Non-commissioned officers carried lances.

The next most probable enemy will be, perhaps, semi-disciplined crowds of horsemen. The best of this class are the Cossacks. Let them be taken as an example. They pride themselves on their capability of looking after themselves individually, on their skill-at-arms, and on their horsemanship. Their large preponderance in numbers will enable them to force the fighting in the style that suits them best, *i.e.*, they will surround the opposing cavalry in swarms, firing from the saddle at them from short distances from all sides, and making dashes at the flanks and rear. This firing from the saddle will not be done on the move. The Cossack will halt his nag some 200 or 300 yards from his enemy, and deliberately take a pot shot at him; if threatened he has but to gather up his reins, and gallop back to safety. Even if only a small number of bullets reach their billet, no harm is done to the firer, and the man aimed at (unless trained to the same practice) has the demoralising feeling of being hit at, without the power of making a return. The corresponding tactics to meet the occasion consist in breaking up a proportion of sowars; to act in the same way, and so prevent the too near approach of the enveloping swarms. Unless these sowars can fire from the saddle, they will break down their horses in making fruitless dashes at an enemy, to whose interest it is, never to get nearer than 200 yards. But, given that they can fire from their saddles, their other duty will be to seize advantageous opportunities of individual mounted combat. And, with their superior horses, they should be able to force acceptance on the Cossacks whenever they see fit. At this stage the sword will prove its use, (any one, who has seen an annual squadron best-man-at-arms competition in a Lancer Regiment, knows how often, owing to the pad of his lance getting entangled with the adversary, a man has to drop his lance to avoid being thrown).

With a lance with a sharp point sent well home, and with two galloping opponents, broken and dropped lances should be anything but exceptional. And in a crowd like this, where every man is on the look out for his easiest victim, there will be a poor chance for any one who is left without sword or lance. Not only will our smaller numbers make every casualty of greater account but the moral effect, to both sides, of a few distinct advantages in encounters at the beginning of a campaign, will have the greatest after results.

In view of our recent alliance, the encounter with regular troops is quite a likely contingency. Charges against infantry are considered improbable now a days. It is a side issue whether the present bullets (which required a steady and minute workmanship to stop even a ravine deer) will suffice to stop charging horsemen. The question remains to be proved or disproved by some cavalry leader, the strength of whose opinions, combined with the local advantages to be gained, may merit the trial. In any case, against infantry, mounted infantry or artillery the lance is enough and is best, once the mounted cavalry man "gets there", a long reach is what is wanted ; and the slow moving or fleeing enemy would hardly be able to wrest the lance away. If cavalry charges cavalry, the case is different. The impact must be followed by the instantaneous flight or surrender of one side or by a broken series of individual combats, as laid down in the drill book. For the actual charge, the lance is best for the front rank. A swordsman has not the same reach and the bumping and pressure of the men on each side of him will prevent the free play of his sword-arm. But once the first collision has taken place, owing to the shock to men and horses and the depth to which the pace of both sides will have driven the lances, it seems probable that the greater number of lances will have been dropped or broken, and that, in the *meleé* stage, the greater number of lancers unless they have swords too, will be defenceless men.

To sum up therefore in favour of each weapon for mounted action :—

- (i) Against Artillery, Mounted Infantry and dismounted men, especially against fanatics, the lance is the best weapon and requires no other.
- (ii) Against irregular cavalry, firing from the saddle is essential—the lance requires the sword in addition—whether the sword, without the lance, is not as good is a matter of opinion.
- (iii) Against Regular Cavalry, the lance is the best weapon for the front rank for the actual collision of the charge, which is the moment when the most damage, actual and moral will be inflicted ; but it needs the sword too for what comes after.

There is only one disadvantage in carrying the sword in addition to the lance, *viz.*, the extra weight of perhaps 4 lbs. on the horse.

The moral seems to be :—Train all cavalry Regiments thoroughly with both sword and lance, and when orders come for the front, let them take the weapon or weapons best suited against the enemy the gods have provided.

A TACTICAL SYNOPSIS.

BY MAJOR W. EWBANK, R E., DEPUTY ASSISTANT ADJUTANT GENERAL FOR INSTRUCTION.

This synopsis was written in the middle of 1901, before the publication of the new Combined Training and new drill-books. It was sent to the Director of Military Education by his desire, and sent by him to the United Service Institution in 1901. Want of space delayed its publication.

It was written originally to assist officers attending the Bangalore garrison class, and was an attempt to render the study of tactics more systematic, firstly, by classifying the subject into certain operations, and, secondly, by laying down a few guiding principles regarding the co-operation of the various arms in each operation.

The principles are put very shortly to assist officers to grasp, and carry them in their heads ; also to leave the detail as to how the principle is to be carried out to be adapted to the circumstances of the case.

As the publication of the synopsis in the Journal of the United Service Institute was delayed until after the publication of the new instructions for training, the Secretary of the United Service Institute kindly allowed me to look over the synopsis again.

I have decided not to make any alterations in the text, but to add a few foot-notes calling attention to paragraphs of Combined Training. The section on outposts was written when the existing drill-books gave few instructions regarding the combined use of cavalry and infantry in mixed outposts. The system here described was borrowed from the German system and adapted to English organisation.

The salient points are—

- (a) observation by cavalry ;
- (b) resistance by infantry ;
- (c) the maximum of rest for both arms ;
- (d) definite rules to ensure reconnoitring, and the transmission of information to the rear.

The subject of warfare in a mountainous country against a guerilla enemy, which has definite principles of its own, is not included in this synopsis.

1. RECONNAISSANCE.

By Cavalry only.

- (a) The dispositions of reconnoitring cavalry should fulfil three conditions :—
 - (i) get, and keep, touch with the enemy ;
 - (ii) be in a formation to concentrate rapidly if attacked ;
 - (iii) have efficient means for quickly conveying information to the rear.
- (b) An advanced squadron throws out reconnoitring patrols. The rest of the squadron is best concentrated as no body less than half a service squadron is of much use for resistance.
- (c) Men of reconnoitring patrols while scouting should study *concealment* as much as possible. One or two men should always be some distance in rear of, but in view of, those forward to escape with information should the patrol be rushed. Officers' patrols get the best information. Reserve squadrons can assist in supplying these officers' patrols.
- (d) Supporting squadrons follow in rear of the advanced squadrons.
- (e) *By cavalry supported by Mounted Infantry and Artillery.*—Cavalry act as in paragraph 1 (a-d), but more squadrons can be used as advanced squadrons as the mounted infantry, if numerous enough, can act in support. Give the artillery an escort of mounted infantry, and let its position, and that of the mounted infantry, be throughout the best to afford rallying points for the advanced cavalry to fall back on.

A small force of cavalry should be told off to watch the flanks of the mounted infantry and artillery.

- (f) *Reconnaissance in force*—Smokeless powder and skilful concealment of an enemy may render this the only means of locating his position. It should fulfil two objects :
 - (i) deceive the enemy and make him think that he is going to be attacked ;
 - (ii) be carried out by troops with the utmost mobility to minimise loss and ensure retreat if necessary.*

* It is possible that *only* a reconnaissance in force will suffice to drive in the hostile advanced troops (outposts or false front), and to discover the enemy's weak point. It may then be undesirable to press the attack further on this particular line.

See "Combined Training," section 10, paragraph 1, page 23, regarding the capture of an intermediate position as part of the reconnaissance.

The disadvantages of a reconnaissance in force are noted in "Combined Training," section 10, paragraphs 8 and 9, and section 58.

Cavalry strengthened by horse artillery may be able to do a good deal, but to carry out (i),—

Mounted infantry may also be necessary :

Make all movements as much as possible under cover :

Give the artillery a mounted escort :

Have some cavalry scouting on each flank with a small force of mounted infantry in support.

If infantry fire is opened on the enemy it should be from a widely dispersed firing line with orders not to advance beyond a given line.

No second line is necessary as the attack is not to be pushed home, but a special reserve (corresponding to the 3rd line of an attack) will be necessary to cover the withdrawal of troops in front.

2. CONDUCT OF AN ADVANCED GUARD.

(a) *Enemy in front : strength unknown*.—The vanguard should take up the best position under cover whence to observe the enemy, and to serve as a rallying point for the advanced cavalry ; cavalry and mounted infantry to work on both flanks, and endeavour to find the enemy's flanks.*

The main guard to close up under cover, and be prepared to reinforce the vanguard if the enemy is in force.

(b) *If the enemy is inferior*.—Let the vanguard, strengthened if necessary, engage him in front while he is attacked vigorously on one or both flanks by the remainder.†

(c) *If the enemy is superior and advancing*.—Take up a position to fight a "containing" action, *i.e.*, an action to hold, and delay, the enemy, to give the Officer Commanding the main body time to make his dispositions and form up. Watch the flanks well with cavalry and mounted infantry.

Open fire at long ranges with the artillery. Dispose the infantry on as broad a front as possible, consistent with adequate defence of the position. This will deceive the enemy, and make a wider turning movement necessary should he try to turn your flank. Keep a portion as special reserve (see paragraph 4, *c-f*, Conduct of a rear guard).

(d) *If the enemy is in strength awaiting attack in a position*.—Act similarly as in paragraph 2 (c) and let the position taken up by the advanced guard be the best possible to cover the forming up of the main body under cover. Make

* See "Combined Training," section 87, paragraph 4, and section 88, paragraph 1.

† See "Combined Training," section 88, paragraph 4.

every effort with the cavalry and mounted infantry, assisted by guns, to determine the exact position of the enemy, and where his flanks rest.*

- (e) *Enemy in front*—the advanced guard is required to seize, and hold, the passages of a river, or similar obstacle, until the arrival of the main body.—Divide the line into sections, if long, allotting a commander and troops to each section. Let cavalry patrol all approaches to the enemy. Allot a few cavalry to patrol along the river, etc. Intrench, as far as possible, troops to hold each passage (preferably posted on the near side).

Patrol between the passages, and keep strong local reserves well placed to reinforce whichever passages are most threatened.

Keep a general reserve centrally placed.

3. *Flank Guard.*

- (a) The march formation to be two or three parallel columns of strength decreasing towards the enemy, each column to have a small advanced and rear guard.
- (b) Communication to be kept up by flanking scouts, and the infantry column nearest the enemy to have flanking scouts towards the enemy.
- (c) Cavalry supported by mounted infantry to scout well out towards the enemy.
- (d) Artillery may be in the centre of the infantry column *not* nearest the enemy, or, if thought desirable, it may be divided, some near the head, and some near the tail of this column.
- (e) If the enemy is on the far side of an obstacle running parallel to the line of march occupy the passages until the main body is past. Similarly occupy any defensive positions running parallel to, and near, the line of march.†

4. *Rear Guard—Covering a retreat.*

- (a) *Order of march.*—Cavalry and mounted infantry in contact with the enemy, cavalry scouting well to each flank. Artillery with mounted escort, near the rear of the column followed by some infantry.
- (b) *Choice of rear guard position.*—Let it be—
- (i) commanding, to obtain good range.
 - (ii) astride the line of retreat.
 - (iii) possessing good lines of retreat for its timely evacuation.

* Note also "Combined Training," section 58.

† See "Combined Training," section 90, paragraph 3.

- (c) *Disposition of troops.*—Cavalry scouting well to each flank to guard against turning movements.
- (d) Artillery, with mounted escort, in the best position to command the enemy's line of approach, and to get a long range.
- (e) Mounted infantry most useful as escort to the guns, and on the flanks of the infantry, whence it can support its flanking cavalry, if the cavalry is driven in, or the infantry, if the latter is hard pressed.
- (f) Infantry disposed on a broad front to deceive the enemy, and make his turning movements wider. Each battalion with a small battalion reserve, say two companies.

Concealment is very necessary. Keep a small special reserve or second line suitably placed to cover the withdrawal of the battalions in the front line.

5. DEFENCE.

Groups itself into three forms:

- (a) *Offensive-defensive.*—Where the object is to inflict a strong counter-attack when the enemy is disorganised in his attack.
- (b) *The containing, or delaying, action.*—Such as a rear guard, or flank guard, might fight.
- (c) *The holding on defence.*—Where a force defends a position, large relatively to its strength, in order to hold it until reinforcements arrive. An advanced guard pushed on to seize, and hold, the passages of a river would be a case in point.

Each of the above has some distinctive principles in the distribution of troops.

- (a) *Offensive-defensive.*—Select the position with the counter-attack prominently in view, *i.e.*, let the ground *invite* the enemy to attack, and at the same time not be such as to hinder your counter-attack.

If the position is long allot definite units and commanders to well defined sections.

Mobile troops (cavalry, some mounted Infantry, and horse artillery) may usefully form a false front to deceive the enemy, and compel an early deployment, retiring, when driven in, to a position ready to join in the counter-attack.

Artillery need not necessarily be massed if the protection of the flanks, or counter-attacks, render its division desirable. Its concealment is most important, both by its position, and by not opening fire

too early. This last does not apply to heavy long range guns. Its special aid will be wanted to assist the counter-attack which the enemy will endeavour to check with his artillery. *

The infantry may be divided into three lines.

The first line to be as far as possible intrenched and concealed. Its duties being to make every use of *cover*, † ample ammunition, and measured ranges, to inflict the maximum loss on the enemy. The second line acts as local reserves to sections. Its duties are to make local counter-attacks, watch flanks, and reinforce weak points. ‡

The third line should be kept concealed in the best position whence to deliver the final counter-attack. In this it must be assisted by artillery.

Concealment from the enemy's artillery is an important consideration.

Machine guns should not be exposed to artillery fire. §

General.—The experience in South Africa of the power of the rifle has modified the ideas of the proportion—'length of position to force.' This also depends on mobility. A mobile force can afford to hold weakly a long line because mobile troops in rear can quickly reinforce the point threatened. Thus if a force is necessarily unduly extended some mounted infantry form a useful force held in rear to reinforce threatened points. ||

Callwell ¶ gives a rough rule for the number of defenders—

2 men	{	one firing one in support near by	}	per 4 paces;
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or 200 yards per company. This is first line only. Occupy strongly points with a poor field of fire and weakly those with a good field of fire.

(b) *The containing or delaying action.*—See paragraph 4 (c-f). The principles laid down for a rear guard action apply. Counter-attacks not being contemplated no second line is necessary, and the third line takes the form of a special reserve just big enough to extricate the first line troops.

* See "Combined Training," section 26, paragraphs 2 and 3.

† See "Combined Training," section 26, paragraphs 4 and 11.

‡ "Combined Training," section 26, paragraphs 5 and 6.

§ See "Combined Training," section 26, paragraph 7, in which the third line is called "General Reserve." The nomenclature of 1st, 2nd, and 3rd line avoids confusion between local and general reserves. This applies also to attack.

|| See "Combined Training," section 26, paragraph 12.

¶ Callwell's "Tactics of To-day."

(c) *The holding on defence.*—See paragraph 2 (e). the principles of which apply. Here the first line takes the form of isolated bodies holding on to vital points.

The second line consists of small local reserves to reinforce the most threatened points. The third line is a small force under the commander of the whole force.

6. ATTACK.

Divides itself into two forms—

- (a) where the attack is to be pushed home ;
- (b) where it is intended to demonstrate merely to occupy an enemy.

An action may be purely under (b), subsequent withdrawal being intended. On a big field part of the attacking force would come under (a) and part under (b), but in this case the latter's object would finally be to push on as the attack succeeded.

(a) The position should be personally reconnoitred by the officer commanding the attack.

For reconnaissance see paragraph 1 (f). The advanced guard troops would serve for this purpose.

The artillery should be given an efficient mounted escort at the outset, not only to protect it but to help scout for it if necessary.* With a clear atmosphere it can usefully come into action at as much as 6,000 yards range. See Callwell† and Combined Training for—

- (1) disposition of guns ;
- (2) great effect of any guns enfilading any portion of the defence ;
- (3) use of long range guns to enfilade a flank that the enemy has refused.

Some cavalry, or mobile troops, should be on each flank. When one flank offers better ground for their action the larger proportion should be on *that* flank.

The division of the infantry is a twofold one :

- (1) lateral division ;
- (2) division from front to rear.

(1) The lateral division consists in directing a strong force against the enemy's weak point, or points, and a containing force against his other points in order to hold the defenders to these latter

* Any scouting done by the escort would be done under the orders of the Officer Commanding the artillery. If the artillery receives orders, or decides, to change position, the escort must be within call to move also.

† Callwell's "Tactics of To-day."

points, and prevent them reinforcing their weak point. Every effort must be made to *deceive the enemy* regarding the main attack.

(2) The "front to rear" division consists of three lines—the first to develop the attack, the second to push it home, and the third under the General Officer Commanding, in a defensible position, if possible, to cover the retreat if the attack fails, or to pursue, and cover reforming if the attack succeeds. *

Under certain circumstances it may be found necessary to use a portion, or even the whole of, the third line in the attack itself. This subdivision is combined with the lateral subdivision. Thus the containing force should not be destitute of second line troops because possibly nothing short of a vigorous attack on their part may be able to effect their object, and they want troops to check counter-attacks. The force to push the attack home has a strong second line.

The third line troops are usually independent of the lateral subdivision.

So far it is assumed that the attacking general has recognised the weak point of the enemy's line. This is usually a flank. The following considerations govern the decision—which flank?

The *strategical flank* is that, the threatening, or capture of which, would cut the enemy off from—

- (1) his co-operating forces ;
- (2) his line of retreat ;
- (3) any point that it is his especial object to cover.

The *tactical flank* is that, the approach to which affords the most cover, or the possession of which would dominate the position.

Measures for pursuit should be thought out for which cavalry and horse artillery with untired horses are especially desirable. In like manner arrangements should be made beforehand for a retreat. Every detail should have been considered, so that, when the necessity arises, no confusion will occur.

7. INFANTRY FORMATION IN ATTACK.

The South African war has modified previous ideas of frontage occupied, and extension, in attack. Briefly they may be said to be as follows :—

(i) Attacking infantry in the open may have to extend at 3,000 yards distance † from the enemy's position.

* See "Combined Training," section 12, paragraph 3.

† When under hostile rifle fire. If under the fire of shrapnel of course extension at a further distance from the enemy may be necessary.

- (ii) Under heavy fire extension intervals of 10 paces or more may be necessary.

A whole company extended to 10 paces would cover over $\frac{1}{2}$ mile. It does not follow that a company would cover this front because the advance over fire-swept zones would probably be advances of a *portion* of the company at a time from one position where some cover was available to the next position where any cover was to be had. Thus the advance would be a step by step advance from cover to cover, cover being improvised where not existing to secure positions won, and to serve as a 'pied à terre' from which to make the next advance.* (In the night advance on Cronje's force at Paardeberg a firing line was followed by a line of men carrying filled sandbags). Each portion of the company would advance extended at wide intervals. Thus the advance would resolve itself into skilful section and group leading over fire-swept zones.

- (iii) Supports, battalion reserves, and troops in second line must move at extended intervals if not under cover.

PROTECTION OF THE INFANTRY FROM THEIR OWN ARTILLERY FIRE.

This is an important question. It is only by the attacking artillery continuing its shrapnel fire up to the last moment possible that the fire of the defenders can be shaken. Experience has shown that it is difficult for battery commanders to decide when their fire runs risks of injuring their own infantry.

A proposal† has been made that the infantry should carry a flag large enough for the artillery commander to see.

See Callwell's† excellent suggestion that attacking infantry should keep communication with their artillery to—

- (1) report their progress ;
 - (2) report the position of hostile guns, the locality of which will probably be discovered by the infantry first. ‡
- (b) The second form of attack should fulfil two objects :
- (1) deceive the enemy and make him think he is going to be vigorously attacked.
 - (2) successfully cover the withdrawal of the troops engaged if necessary.

Thus a wide extension of the first line, a limit to their forward movements, a very small second line, and a fairly strong third line, well posted to cover the withdrawal, are desiderata.

* See "Combined Training," section 20.

† Callwell's "Tactics of To-day."

‡ See "Combined Training," section 18.

8. PROTECTION OF A CONVOY.

(a) Choose for the route of the convoy that which—

- (1) affords concealment ;
- (2) is furthest from the enemy ;
- (3) affords suitable ground for the escort to take up defensive positions if necessary.

(b) Divide the escort primarily into two parts :—

- (i) a force to manœuvre and engage the enemy, if he attacks, far enough away from the convoy to enable the latter to continue its march, and not to be fired on ;
- (ii) A force with the convoy consisting of small advanced, and rear, guards, and men disposed in small parties along the convoy to keep discipline among the drivers, adjust loads, and to keep *the convoy closed up*. The necessity, or otherwise, of other formed bodies at intervals along the convoy will depend on its length.

Make every effort to keep the convoy moving. If unable to proceed further laager on the ground offering the best field of fire, placing the cattle in the laager.

9. *Attack on a convoy*.—From the above it follows that the best attack will be that which catches the convoy in ground where it cannot laager conveniently, and which outmanœuvres the escort so as to fire on the animals drawing the wagons.

10. REQUISITIONING.

(a) Divide the force primarily into two parts :—

- (A) covering party ;
- (B) requisitioning party.

Let the covering party move on ahead patrolling all approaches to the enemy ; infantry, mounted infantry, or guns, to take up the best defensive position to serve as rallying points for the cavalry to fall back on.

When the requisitioning is complete this party to cover the withdrawal.

(b) The requisitioning party (A) should be divided into—

- (1) small parties to close the entrances to villages, with a small reserve in the centre ;
- (2) men to carry out the requisitioning.

Send for the village headman.

Put sentries over any accumulations of supplies. Send each cart when loaded to form up outside the village on the return road. Requisition first the villages nearest the enemy, and as many at the same time as possible.

Have a strong rear guard in the retreat and an advanced guard scouting well *in front, and to the flanks*, along the road back (to avoid ambushes like that of Sanna's Post).

II. OUTPOSTS.

Outposts should, if possible, fulfil three objects,—

- (1) deny to the enemy any ground whence he can shell the camp ;
- (2) provide a line of resistance.

The *amount* of resistance to be offered will depend on whether the outposts are to —

- (a) hold the enemy until the main body can form for battle ;
or to merely—
- (b) cover the withdrawal of advanced cavalry and give the main body time to move off.

- (3) gain early information of the enemy.

Of the above three objects (1) and (2) are most affected *by ground* and should therefore affect more the choice of the line of outposts.

No. (3) is chiefly carried out by patrolling where conditions admit of patrolling ; otherwise a stationary line of observation posts must be posted in a position best suited for observation.

In any case concealment of posts is very essential.

This synopsis does not profess to go into the detail of the tactics of each arm, but merely to suggest a few principles for the co-operation of the various arms.

A force of independent cavalry would provide for its security by cavalry outposts according to the cavalry drill book,* and a force of infantry, weak in cavalry would throw out a line of infantry outposts. It may be assumed that, no matter what the force of cavalry is at the disposal of a commander of a mixed force—or whether he has sent some of his cavalry forward as independent cavalry or not—he would retain a small fraction of cavalry under the command of his advanced guard commander. Its object is to provide for the immediate security of the advanced guard, and to reconnoitre ground more carefully than the independent cavalry (possibly many miles in advance) will have time to do. When the force halts the advanced guard (or a portion of it) would probably provide the outposts.

* And Combined Training, section 133.

We want then a few principles as to how the infantry and cavalry in the advanced guard might co-operate so as to—

- (1) make the best use of the power of each arm ;
- (2) give the troops the maximum of rest.

The system about to be described is borrowed from Griepenkerl's "Tactics," pages 456 to 514, and it is claimed for it that it fulfils the above two objects.

The relative duties of the two arms, command, and action if attacked, are precisely the same when forming outposts to the main body halted as when forming an advanced guard to the main body on the march. Furthermore it has the great advantage that the infantry of the advanced guard, after an early start and a day's march, can get some rest at once, *cavalry* picquets covering their front until nightfall, the infantry forming only supports. At night cavalry want rest so—with the exception of standing cavalry patrols left out on important routes—the cavalry withdraw, and the infantry supports throw out infantry picquets.

The steps in this process would be as follows:—

The General Officer Commanding main body decides to halt.

He sends word to the advanced guard commander (if not previously intimated) and sends the latter orders *detailing* the outposts.

These orders will also indicate the *amount* of resistance that the outposts must offer. Note that the General Officer Commanding main body may not be with the advanced guard, and can probably only indicate the general line of outposts, and where its flanks are to rest from the map—even if he has a map. The advanced guard commander, on receipt of these orders, selects a line of resistance for his infantry supports conformably to the orders received.

He, presumably, is with the main guard or van guard of the advanced guard. His cavalry forming his advanced party are some miles in advance. He at once sends instructions to the cavalry commander to form a cavalry line of observation. The advanced guard commander can only judge this approximately from the map, so he leaves all the details to the cavalry commander who is already on the ground in front, but the advanced guard commander can indicate the lateral limits. He should further inform the cavalry commander, at once, if he can (otherwise as soon as possible) of the line of resistance the infantry are taking up. On receipt of these instructions the cavalry commander disposes his force in a line of posts. A post may be merely a picquet covering itself by either—

- (a) vedettes,
- (b) cossack posts,
- (c) standing cavalry patrols,

or, it may be of the nature of a cavalry support, a squadron, or half squadron, covering itself by a picquet, the picquet itself covered by either of the above (a), (b) or (c).

In any case the cavalry commander's duty (as when on the march), is to patrol towards the enemy, afford what resistance he can to small parties, and, if attacked in force, to fall back on to the infantry line of resistance. As soon as his dispositions are complete he reports them with a rough sketch to the officer commanding advanced guard. When he receives outpost orders by the officer commanding advanced guard (who is now officer commanding outposts) he receives in them orders regarding the hour at which, and the place to which, he is to withdraw, any instructions about standing cavalry patrols at night, orderlies required, and the hour at which he is to resume his day dispositions next morning.

The outpost commander disposes his infantry in a line of supports, probably of one to two companies each. Each support might be given a well defined section.

The men get as much rest as possible since with a line of cavalry picquets out in front the support need only throw out by day a detached post, its strength varying with its situation, and its distance from the cavalry picquets in front. The duty of this detached post is to keep up communication with the cavalry picquets, by signalling, or by patrols, and to watch the immediate vicinity of the infantry support. Each support should have four to eight mounted men as orderlies. If these were not available with the officer commanding outposts he would direct the officer commanding cavalry to supply them. The officer commanding cavalry would provide one examining post on each important road without requiring special orders. The outpost orders would direct what infantry examining posts would be considered necessary. No examining posts should be in a line of picquets, the reason being that men are blindfolded at the examining posts and should not be allowed to see the position of picquets before being blindfolded.

12. NIGHT DISPOSITIONS.

The officer commanding cavalry withdraws his cavalry, except certain standing cavalry patrols, conformably to the orders received in outpost orders.

A standing cavalry patrol consists usually of a section (seven to eight men). It conceals itself near a road, or junction of roads, and does a little patrolling on its own account.

The outpost orders will have ordered the infantry supports to throw out night picquets, or detached posts, *one hour before* the hour named for the cavalry to withdraw. There should be a party of some sort (picquet or detached post) watching every track, or approach.

Lateral patrolling should be kept up between posts, and patrolling to the front up to the standing cavalry patrols.

Night picquets are best placed behind obstacles, and with the best uniformly strong line of resistance. They can temporarily barricade bridges at night. The outpost orders will direct these night posts of infantry to withdraw *one hour after* the hour named for the cavalry to resume its day dispositions. Some cavalry should start early enough to ascertain if the enemy is within 10 miles at dawn.

13. NIGHT MARCHES.

A night march may be necessary to surprise and surround an isolated force of the enemy, or to deliver an attack on a position at dawn.

The two important points to bear in mind in arranging the march are—

(a) secrecy ;

(b) reconnoitre the route previously if possible.

(a) can be assisted by issuing orders late, or confidentially, and by spreading false reports as to the movement intended.

(b) may not be always possible ; and if not possible, reliance must be placed on a guide. Any doubt about the guide renders the operation hazardous.*

Assuming that the route can be reconnoitred, the officer who performs this duty would probably have a small escort. This same officer should lead the column, and the escort that accompanied him when reconnoitring may usefully accompany him at the head of the column, in which case he can drop men, if necessary, where routes diverge, to ensure all units taking the correct route.

The three dangers to be guarded against are—

(1) the leader mistaking the route in the dark ;

(2) units in rear losing touch with the units in front ;

(3) touch having been lost, rear units taking a wrong turning.

To guard against (1) the officer who reconnoitres the road would note in a country with roads all turnings, bridges, defiles, land marks distinguishable at night, and the distances to them, noting carefully the correct route and its compass bearing.

* See " Combined Training, " section 36, paragraph 3.

In a roadless country the distances and bearings must be most carefully noted. The following points might also be noted in any reconnaissance for a night march :—

- any points where a small hostile force could arrest the march ;
- points where the road is under cover, or commanded ;
- objects that show against the sky line ;
- anything that would hinder the march ;
- the front on which troops could march.

All officers should know how to set Verner's (or other) luminous night marching compass. It must be set with the aid of a light before starting.

If luminous painted cardboard is obtainable a map for night purposes can be prepared as follows :—

Draw on tracing paper a single line $\frac{1}{4}$ inch thick to represent the road. Print its bearing in block printed letters at least $\frac{1}{2}$ inch high. Mark along the road anything recognisable in the dark. Print along the road the distances to these points. All printing must be at least $\frac{1}{2}$ inch high. This tracing placed over the luminous card board can be read at night.

Two officers should lead the column : one giving all his attention to the bearings, and the other pacing the distances.

They should not be immediately at the head of the column as the rifles might affect the needle, and the column would have to check at every check of the leaders, but careful arrangements for touch with connecting files, or even with rope, must be made.

To guard against the danger mentioned in (2)—losing touch—the march orders should contain a paragraph that every unit is held strictly responsible for the maintenance of touch with the unit in its rear.

To guard against (3)—rear units taking the wrong turning—turnings not to be taken can be blocked,* but a better plan would be for the leader to drop men from his escort, directing each man to wait for the rear unit of the column. Every brigadier and commanding officer should be enjoined to keep his place at the head of his unit. Very little alteration of place in the march on their part renders it difficult to find them in the dark.

Every brigadier and commanding officer should have an orderly if possible.

The orders to be given to the men should forbid—

- talking,
- lights,
- smoking,

With a skilful enemy, or in an unfriendly country anything placed to block a road or serve as a landmark might be removed by hostile individuals.

Arms should be unloaded and carried at the slope.*

In order to arrive at the position before dawn ample time must be allowed. Any data as to the rate of march can only be very approximate, but probably calculation would be on the safe side if allowing for—

2 miles an hour on roads if the night is good, $\frac{1}{2}$ mile an hour if the night is dark, and 1 mile an hour in a roadless open country. In all cases one hour extra before dawn should be allowed to form for attack.†

For an attack every non-commissioned officer should know the compass bearing from the place of rendezvous to the enemy's position.

* See "Combined Training," section 39, paragraphs 1, 2 and 6.

† See "Combined Training," section 37, regarding "position of assembly and position of deployment for night attack, and section 40 for Formations."

THE BATTLE OF PLASSEY.

By J. W.

Some time ago the writer had an opportunity of visiting the field Plassey. It lies now off the road of the ordinary traveller. The old Trunk Road from Calcutta to Moorshedabad, up which Clive's little army marched in 1757, was improved and metalled when the East India Company became the sovereigns of Bengal and established a large cantonment at Berhampore. But the cantonment was abandoned in 1870. A railway was made along the west bank of the Bhagirathi from Howrah, which gave easy access to Moorshedabad and Berhampore, and the road has fallen into decay. Plassey, which lies nearly thirty miles south of Moorshedabad, is now reached with difficulty by road, and is most accessible in the rains, when the river is full, and an occasional steamer makes a journey up or down.

The Imperial Gazetteer says :—"Of the memorable scene of Clive's victory over Seraj-ud-daula on the 23rd June, 1757, only a small fragment now remains. The Bhagirathi, on whose left or east bank the battle was fought, has eaten away the scene of the fight." This is untrue. The battlefield remains almost exactly as it was in 1757. In the library of the Nawab Bahadur of Moorshedabad is a map of the Moorshedabad country, and a plan of the battle prepared by the geographer Rennell. There is no date on the map, but as it is dedicated to Lord Clive, who died in 1774, it must have been drawn before that date. In none of the published lives is there any plan of the battle, and it will interest every student of military history to see it. A copy is attached to this article. The great loop of the river, in which Seraj-ud-daula's army lay entrenched, has been cut through by the river, but the deserted bed is still distinct, and the favourite snipe ground of the district officers. The famous mango tope in which the troops of Clive spent the night before the battle, has disappeared, but it is only ten years since the fall of the last survivor of these old trees. Otherwise the battlefield is unchanged. The tank, marked D on the plan, still exists, from which the French cannon played on the British. The mound F, the capture of which "completed the victory," still rises, bare and bleak, over the plain.

With this map and plan, the military reader will follow with interest the story of the battle. The best account of it is the latest, in Colonel Malleon's *Life of Clive in the Rulers of India* series. Clive's own description of it in his despatch, after the battle is of the shortest. Orme's *History* greatly enlarged it. Colonel Malleon has collected all the materials now available and without further preface it is reproduced to the readers of this magazine :

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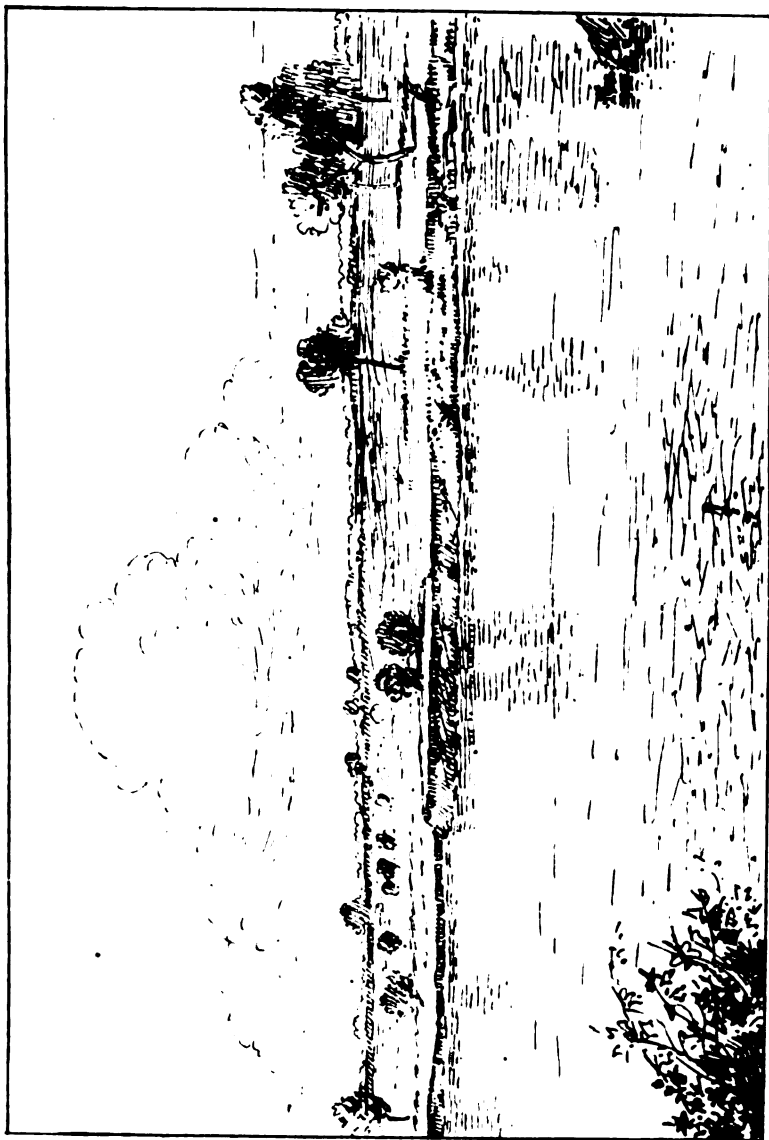
nagar. To that place he despatched on the 12th of June all the soldiers available, and 150 sailors lent him by the Admiral, leaving Calcutta guarded by a few sick Europeans, some sipahis to look after the French prisoners, and a few gunners to man the guns on the ramparts. On the 13th he quitted Chandranagar, the Europeans, with the guns, munitions, and stores, proceeding by water in 200 boats, towed by natives against the stream, the sipahis marching along the right bank of the river, on the highroad made by the Mughal Government from Hugli to Patna.¹ The force consisted, all told, of about 900 Europeans, 200 men of mixed native and Portuguese blood who served with the Europeans, a small detail of lascars, and 2,100 sipahis. The artillery consisted of eight six-pounders and two small howitzers.

"The day after the force had set out Clive despatched to the Subahdar a communication tantamount to a declaration of war; and he proceeded, as he approached the enemy's camp, to act as though such a declaration had been accepted. On the 16th he reached Palti, a town on the western bank of the Kasimbazar river about six miles above its junction with the Jalangi. Twelve miles higher up he came within striking distance of Katwa, the Governor of which was supposed to be one of the conspirators. Clive, expecting that the opposition would not be serious, despatched to occupy it, on the 17th, 200 Europeans and 500 sipahis, under Major Eyre Coote. But either the Governor had changed his mind or he had only feigned compliance, for he prepared to resist Coote's attack. Coote at once made preparations for an assault, and took such dispositions, that the garrison, recognizing the futility of resistance, and fearing to be cut off, evacuated the place, leaving large supplies in the hands of the victors.

"The next day, the 18th, a terrific storm raging, the force halted. The day following, Clive, who had committed himself to the enterprise mainly on the conviction that Mir Jafar would support him, received a letter from the nobleman, informing him that he had feigned reconciliation with the Subahdar and had taken an oath not to assist the English, but adding that 'the purport of his convention with them must be carried into execution.' This strange letter from the man upon whose co-operation he particularly depended led Clive to doubt whether, after all, Mir Jafar might not betray him. Under this possibility, the sense of the extreme danger of the enterprise in which he was engaged revealed itself to him more clearly than it had ever presented itself before. To cross an unfordable river in the face of a vastly superior enemy, at a distance of 150 miles from all support, would, he felt, be a most hazardous undertaking. Should Mir Jafar be faithless to him, as he had appeared to be to his master, and should the English force be defeated, there would scarcely survive a man to tell the tale. Again would Calcutta be in jeopardy—this time probably beyond redemption. Under the influence of such thoughts he resolved not to cross the river until he should receive from Mir Jafar more definite assurances.

"The next day, the 20th, a messenger arrived from his agent, Mr. Watts, who was then at Kalna, carrying a letter to the effect that before he quitted Murshidabad he had been engaged in an interview with Mir Jafar and his son, when there entered some emissaries of the Subahdar; that, in the presence of these, Mir Jafar had denounced

¹ *Vide Broome's History of the Bengal Army*, p. 137.



PLASSEY
The Tank.



PLASSEY
The Battle field

Mr. Watts as a spy, and had threatened to destroy the English if they should attempt to cross the Bhagirathi. This letter decided Clive. He resolved to summon a Council of War.

"There came to that Council, about noon of the 21st of June, the following officers: Colonel Clive, Majors Kilpatrick and Grant, Captains Gaupp, Rumbold, Fischer, Palmer, Le Beaume, Waggonner, Corneille, and Jennings, Captain-Lieutenants Parshaw and Molitore;—Major Eyre Coote, Captains Alexander Grant, Cudmore, Armstrong, Muir, Campbell, and Captain-Lieutenant Carstairs. The question submitted to them was: 'whether under existing circumstances, and without other assistance, it would be prudent to cross the river and come to action at once with the Nawab, or whether they should fortify themselves at Katwa, and wait till the monsoon was over, when the Marathas or some other country power might be induced to join them.' Contrary to the usual custom, Clive spoke first, the others following according to seniority. Clive spoke and voted against immediate action. He was supported by the twelve officers whose names immediately follow his own name in the list I have given, and opposed by the owners of the seven last names, Major Eyre Coote speaking very emphatically in favour of action; the majority of the Council, we thus see, siding with Clive.

"The subsequent career of Eyre Coote, especially in Southern India, proved very clearly that as a commander in the field he fell far short of Robert Clive, but on this occasion he was the wiser of the two. Some years later Clive, giving his evidence before a Select Committee of the House of Commons, emphatically stated that had he abided by the decision of the Council it would have caused the ruin of the East India Company. As it was, he reconsidered his vote the moment the Council was over. It is said that he sat down under a clump of trees, and began to turn over in his mind the arguments on both sides. He was still sitting when a despatch from Mir Jafar reached him, containing favourable assurances. Clive then resolved to fight. All doubt had disappeared from his mind. He was again firm, self-reliant, confident. Meeting Eyre Coote as he returned to his quarters, he simply informed him that he had changed his mind and intended to fight, and then proceeded to dictate in his own tent the orders for the advance.

"At sunrise on the 22nd the force commenced the passage of the river. By four o'clock it was safe on the other side. Here a letter was received from Mir Jafar, informing Clive of the contemplated movements of the Nawab. Clive replied that he 'would march to Plassey without delay, and would the next morning advance six miles further to the village of Daudpur, but if Mir Jafar did not join him there, he would make peace with the Nawab.' Two hours later, about sunset, he commenced his march amid a storm of heavy rain which wetted the men to the skin. In all respects, indeed, the march was particularly trying, for the recent rains had inundated the country, and for eight hours the troops had to follow the line of the river, the water constantly reaching their waists. They reached Plassey, a distance of fifteen miles, at one o'clock on the morning of the 23rd of June, and lay down to sleep in a mango-grove, the sound of drums

Vide Ives's Voyage and Historical Narrative p. 150. Mr. Ives was surgeon of the *Kent* during the expedition to Bengal, and was a great friend of Admiral Watson.

and other music in the camp of the Nawab solacing rather than disturbing them. The Subahdar had reached his headquarters twelve hours before them.

"The mango-tope in which the English were resting was but a mile distant from the intrenched position occupied by Siraj-ud-daula's army. It was about 800 yards in length and 300 in breadth, the trees planted in regular rows. All round it was a bank of earth, forming a good breastwork. Beyond this was a ditch choked with weeds and brambles. The length of the grove was nearly diagonal to the river, the north-west angle being little more than 50 yards from the bank, whilst at the south-west corner it was more than 200 yards distant. A little in advance, on the bank of the river, stood a hunting-box belonging to the Nawab, encompassed by a wall of masonry. In this, during the night, Clive placed 200 Europeans and 300 natives, with two field-pieces. But in the morning he withdrew the greater part of them.¹ He had with him 950 European infantry and artillery, 200 topasses, men of mixed race, armed and equipped as Europeans, 50 sailors with seven midshipmen attached, 2,100 sipahis, a detail of lascars, and the field pieces already mentioned.

"On the spot which the Nawab had selected for his intrenched camp the river makes a bend in the form of a horseshoe, with the points much contracted, forming a peninsula of about three miles in circumference, the neck of which was less than a quarter of a mile in breadth. The intrenchment commenced a little below the southern point of this gorge, resting on the river, and extending inland for about 200 yards, and sweeping thence round to the north for about three miles. At this angle was a redoubt, on which the enemy had mounted several pieces of cannon. About 300 yards to the eastward of this redoubt was a hillock covered with jungle, and about 800 yards to the south, nearer Clive's grove, was a tank, and 100 yards further south was a second and larger one. Both of these were surrounded by large mounds of earth, and, with the hillock, formed important positions for either army to occupy. The Subahdar's army was encamped partly in this peninsula, partly in rear of the intrenchment. He had 50,000 infantry of sorts, 18,000 horse of a better quality, and 53 guns, mostly 32, 24 and 18-pounders. The infantry was armed chiefly with matchlocks, swords, pikes, bows and arrows, and possessed little or no discipline; the cavalry was well trained and well mounted; the guns were mounted on large platforms, furnished with wheels, and drawn by forty or fifty yoke of powerful oxen, assisted by elephants. But the most efficient portion of his force was a small party of forty to fifty Frenchmen, commanded by M. St. Frais, formerly one of the Council of Chandranagar. This party had attached to it four light field-pieces.²

"At daybreak on the 23rd of June the Nawab moved his entire army out of the intrenchment and advanced towards the position occupied by Clive, the several corps marching in compact order. In front was St. Frais, who took post at the larger tank, that nearest Clive's grove. On a line to his right, near the river, were a couple

¹ Vide Orme's *History of India*, Broome's *History of the Bengal Army*.

² For these details see Orme, Broome, Clive's *Evidence before the Committee of the House of Commons*, Clive's *Report to the Court of Directors*, Sir Eyre Coote's *Narrative*, and Ives's *Voyage and Historical Narrative*. The account which follows is based entirely on these authorities.

of heavy guns, under the orders of a native officer. Behind these two advanced parties, and within supporting distance, was a chosen body of 5,000 horse and 7,000 foot, under the immediate command of the Nawab's most faithful general, Mir Madan.¹ The rest of the Nawab's army extended in a curve, its right resting on the hillock near the camp; thence sweeping round in dense columns of horse and foot to the eastward of the south-east angle of the grove. Here, nearest to the English, were placed the troops of Mir Jafar, then those of Yar Lutf Khan, beyond these Raja Dulab Ram. The English within the grove were thus almost surrounded by the river and the enemy; but in view of the promised treachery of Mir Jafar, the greatest danger was to be apprehended from their immediate front, *viz.*, from St. Frai, with his little body of Frenchmen, and from Mir Madan.

"From the roof of the hunting-house Clive watched his enemy take up the positions which would hold him, if their generals were true to their master, in a vice. 'They approached apace,' he wrote in a letter of July 26 to the Secret Committee of the Court of Directors, 'and by six began to attack us with a number of heavy cannon supported by the whole army, and continued to play on us very briskly for several hours, during which our situation was of the utmost service to us, being lodged in a large grove, with good mud banks. To succeed in an attempt on their cannon was next to impossible, as they were planted in a manner round us, and at considerable distances from each other. We therefore remained quiet in our post, in expectation of a successful attack upon their camp at night. About noon the enemy drew off their artillery and returned to their camp.

"So far, up to mid-day, we have the outline of the fight as narrated by Clive; it is, however, but an outline. It would seem that the action commenced by a discharge of one of the four guns of St. Frai. This discharge killed one and wounded another of the men of the European battalion. Immediately afterwards the whole of the enemy's guns opened fire, but their shots flew high, and did but little mischief. Clive meanwhile had drawn up his troops in front of the grove, their left resting on the hunting-box, with the exception of two guns and two howitzers which he had posted at some brickkilns some 200 yards in front of the hunting-box spoken of. These, as soon as the enemy opened, replied promptly and effectively. The remaining six guns, placed three on each flank of the European battalion which formed the centre of his line, answered the heavy batteries of the enemy, but, from their small calibre, made but little impression.

"After a cannonade of half an hour, the English having lost ten Europeans and twenty sipáhís killed and wounded, Clive withdrew them under shelter of the grove, leaving one detachment at the brickkilns, another at the hunting-box. This retrograde movement greatly encouraged the enemy. They brought their guns much nearer, and their fire became more vigorous and sustained. But its effect was less fatal, for the English troops were protected by the trees and the mud bank, and sitting down, were but little exposed. This warfare

¹ See Elliot's *History of India*, vol. vii. p. 428.

continued till about eleven o'clock, the casualties being far greater on the side of the Nawáb's army than among the English. Then Clive summoned his principal officers to a conference, and it was resolved that the troops should occupy their existing positions until midnight, and should then attack the Nawáb's camp. We may regard the close of the conference as occurring about the same time as the withdrawal of the enemy's artillery indicated by Clive in the above extract from his despatch.

"For, scarcely was the conference over, than the skies poured down a fierce shower, such as occurs often during the rainy season, which lasted an hour. Then it was that the enemy's artillery fire slackened by degrees almost to the point of ceasing, for the rain had damaged their ammunition, left almost completely without cover. Clive had been more careful of his powder, so that when the enemy's horse, believing the English guns as powerless as their own, advanced towards the grove to charge, they were received with a fire which emptied many a saddle, and sent them reeling back. In this charge Mir Madan, previously referred to, was killed."

"The death of this brave and faithful soldier greatly disheartened the Subahdár. He sent for Mir Jafar, and implored him to remain faithful to his oath. Taking off his turban and casting it at the feet of his uncle,² he exclaimed in humble tones, 'Jafar, that turban thou must defend.' Mir Jafar promised, but instead of performing, the degenerate Muhammadan returned to his confederates and sent a despatch to Clive, informing him of all that had passed, and begging him to push on immediately, or, if that were impossible, not to fail to attack during the night. His letter did not reach Clive till late in the evening. Meanwhile other influences had been at work to bring about a similar result.

"It is impossible not to feel sympathy for the youthful prince surrounded by traitors, his one true adherent killed. Scarcely had Mir Jafar quitted him when there came to him another traitor, Raja Dulab Ram, who commanded the army corps nearest to the position he had taken. The Raja found his master in a state of great agitation. The English were showing themselves in the open; his own men were giving way; hope was vanishing quickly. Instead of encouraging the Subahdar to fight it out, the treacherous Raja gave fuel to his fears, told him the day was lost, and urged him to flee to Murshe-dabad. In an evil hour for his dynasty and for himself, Siraj-ud-daula yielded to his persuasions, and, ordering his troops to retire within the intrenchment, mounted a swift dromedary, and fled, accompanied by 2,000 horsemen, to his capital.

"It was then two o'clock. The first hour since Clive's conference had been marked by the heavy rain: the second by the repulse of the Subahdar's horsemen; the following up of the repulsed attack; the conversations of the Subahdar with his two treacherous generals. By two o'clock the enemy's attack had completely ceased, and they were observed yoking their oxen preparatory to withdrawing within the intrenchment as the Subahdar had ordered. There remained only on the ground that body of forty gallant Frenchmen under St. Frais, whom I have described as occupying the ground about the larger

¹ Elliot states, on the authority of the J'ami'ut Taw'arikh, that he was accidentally struck by a cannon-ball. *History of India*, vol. vii, p. 427.

² Mir Jafar had married the sister of All Vardi Khán, the Nawáb's father.

tank, that nearest to the grove. The post was an important one, for from it the English could have taken the retreating enemy in flank and have inflicted heavy loss upon them. St. Fraiſ was nearly isolated, but he, too, had ſeen the advantage the English would derive from occupying the poſition, and, faithful amid the faithleſs, he, with the gallantry of his nation, reſolved to defend it until it ſhould be no longer defenſible.

“ There was with the army a very gallant officer, Major James Kilpatrick, who had greatly diſtinguiſhed himſelf in Southern India, and who, on this occaſion, commanded the Company's troops. Kilpatrick had noted the firm front diſplayed by St. Fraiſ, the great advantage to be derived from occupying the poſition he held, the diſadvantage of leaving him to hold it whiſt the English force ſhould advance. He reſolved, then, to expel him: ſo ſending word to Clive of his intentions, and of the reaſon which prompted his action, he marched with two companies towards St. Fraiſ.

“ Clive, meanwhile, ſeeing the enemy's attack broken, yet deeming it better, not having received Mir Jafar's letter, to wait till the ſun ſhould have deſcended before making the deciſive attack, had proceeded to the hunting-box to reſt after ſo many hours of fatigue and excitement, to be followed, he believed, by many more, having firſt given orders that he ſhould be informed of any change that might occur in the enemy's poſition. He was there when the meſſage of Kilpatrick reached him. Riſing, he hurried to the ſpot, met Kilpatrick as he was advancing to the aſſault, reprimanded him for having taken ſuch a ſtep without orders, but ſeeing him ſo far forward, he took himſelf the command of the detachment, ſending back Kilpatrick to the grove to bring the remainder of the troops. When St. Fraiſ recognized the earneſtneſs of the English, and that he was entirely without ſupport, he evacuated the poſt, and retreated to the redoubt at the corner of the intrenchment. There he placed his guns ready for action.¹

“ Meanwhile, whiſt the English force was thus advancing, the army corps commanded by Mir Jafar was obſerved to linger behind the reſt of the retreating enemy. It was noticed, further, that when it had advanced almoſt abreast of the northern line of the grove, it faced to its left and advanced in that direction. For a time it ſeemed to the English officers as though the troops composing it were about to make a raid on their baggage, and a party with a field-piece was ſent forward to check them. The corps then halted, remained ſo for a time, then ſlowly retired, taking, however, a direction which led it apart from the other corps of the enemy. We ſhall return to them in a few moments.

“ Whiſt this corps was executing the manœuvre I have deſcribed, Clive had advanced to a poſition whence he could cannonade the enemy's camp. The effect of this fire was to cauſe great loſs and confuſion amongſt the troops of the Subahdar, at the ſame time that the English, giving, by their advance, their flank to the French in the redoubt, ſuffered alſo. To put an end to this croſs-fire Clive ſaw that the one remedy was to ſtorm the redoubt. He was unwilling, however, to riſk his troops in a ſevere conteſt with the French ſo long as the army corps, the movements of which I have deſcribed in the

¹ This episode is not ſpecially mentioned by Clive, but it reſts on irrefragable evidence. *Vide Orme*, vol. ii, p. 176: ſee alſo Sir Eyre Coote's *Narrative*; alſo *Malcolm's Life of Lord Clive*, vol. i, p. 260.

preceding paragraph, should continue to occupy its apparently threatening position. That corps might be the corps of Mir Jafar, but there was no certainty that it was so, for Clive had not then received Mir Jafar's letter, nor was he aware of the flight of the Nawab. It was just at this critical moment that he observed the corps in question making the retrograde movement I have referred to. Then all doubt was over in his mind. It must, he was convinced, be the corps of his adherent. Certain now that he would not be molested, he hurled his troops against the redoubt and the hillock to the east of it. St. Frais displayed a bold front, but, abandoned almost immediately by his native allies, and deeming it wiser to preserve his handful of Europeans for another occasion, he evacuated the redoubt, leaving his field-pieces behind him. His resistance was the last opposition offered to the English. The clocks struck five as he fell back, thus tolling the memorable hour which gave to England the richest province in India; which imposed upon her the necessity to advance upwards from its basis until she should reach the rocky region called with some show of reason the 'Glacis of the Fortress of Hindustan.'

"Just as the beaten and betrayed army was moving off with its impedimenta, its elephants, its camels, leaving to be scrambled for an enormous mass of baggage, stores, cattle, and camp equipage, Clive received messengers from Mir Jafar requesting an interview. Clive replied by appointing a meeting for the morrow at Daudpur, a village twenty miles to the south of Murshedabad. Thither the bulk of the troops, their spirits cheered by the promise made them that they would receive a liberal donation in money, marched that evening; whilst a detachment under Eyre Coote went forward in pursuit, to prevent the enemy from rallying. After a short halt, to enable the commissariat to exchange their small and worn-out bullocks for the splendid oxen of the Subahdar, the troops pressed on, and at eight o'clock the entire force was united at Daudpur.

"Such was the battle of Plassey. The loss of the English force was extremely small, amounting to seven Europeans and thirty-six sipahis killed, and thirteen Europeans and thirty-six sipahis wounded. No officer was killed; two were wounded, but their names are not recorded. A midshipman of the *Kent*, Shoreditch by name, was shot in the thigh, whilst doing duty with the artillery. The enemy's casualties were far greater. It was calculated to be, in killed and wounded, about a thousand, including many officers. They had been far more exposed than the English. Writing in the letter already referred to of the phases of the action between two and five o'clock, Clive states that their horse exposed themselves a great deal; that 'many of them were killed, amongst the rest four or five officers of the first distinction.'

"Clive had gained his victory."

On the field there stands a simple obelisk, which bears the plain inscription—

PLASSEY.

Erected by the Bengal Government in 1883.

MEDIUM GUNS AND HOWITZERS.

BY LIEUTENANT-COLONEL A. KEENE, D.S.O., ROYAL ARTILLERY.

It may be taken for granted that ordnance of a type intermediate between the heavy guns mounted in land forts and coast defences, and those used by horse and field batteries, will be taken into the field in future campaigns.

Those most interested in the question, *vis.*, the Royal Artillery, evidently think so, for the subject set by the Committee of the Royal Artillery Institution for the last prize essay was "The training, organisation, and equipment of the Royal Garrison Artillery, with medium guns and howitzers, and their tactics in future field operations." I make no apology for reading a paper on this subject, which may appear to some of too technical a nature for a general audience, because it is only by striving to learn a good deal about all arms that officers can get a comprehensive grasp of their profession.

The papers that were sent in, in answer to the above proposition, were in most cases prepared by officers of the artillery actually serving in South Africa, and on these my lecture is based.

The medium gun was not long in making its presence felt in the Boer war.* Hardly had our soldiers settled in a new camp on the morning after the battle of Talana Hill, when shells fired from a big gun on the Impate Mountain began to fall in the camp, coming from a distance of 8,000 yards, and the effect on our men was most demoralizing.

Before, however, we go any further in describing the uses to which medium guns were put, it will be interesting to see exactly what guns and howitzers were used, and whether they gave satisfaction.

The first of these guns was the 4·7" gun; it made its appearance as you will recollect in a somewhat dramatic manner, on that morning which the defenders of Ladysmith knew as "Black Monday." After a few rounds it silenced, for a time only, the Boer big guns whose fire was galling our retiring troops. Our 4·7" gun was on a field mounting hastily designed for the occasion, and, though serviceable in Ladysmith, was much too heavy and cumbersome to be a handy weapon in the field, for it required 32 oxen to drag it about.

Note.—This paper was one of a series of lectures delivered at Quetta during the cold weather 1901-02. The principle of training certain garrison companies as heavy batteries, that is, in such a way as to enable them to work medium guns with an army in the field, has been adopted by the Government of India.

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"Just as the beaten and the rounds fired from this off with its impedimenta, its properly speaking, a medium scrambled for an enormous mass and from this fact, and because of its equipment. Clive received messages among the medium guns. It became an interview. Clive replied by a Boer field gun (7.5 cm. Green). Daudpur, a village twenty miles from the bulk of the troops, the 12-pounder fired 5.1.3. The 12-pounder fired 5.1.3. that they would receive the evening; whilst a detachment of HOWITZERS.

pursuit, to prevent the place fires a shell of 120 lbs. weight, enable the commissary to follow it owing to its heavy ammunition and to for the splendid work, while its limit of range prevents eight o'clock the enemy's work. As regards the platform.

"Such was the case it can often be fired without error. Its extremely small size puts it out of date.

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does not mention mules. I cannot help thinking that big draught
mules can be easily got from Spain, France, and both North and South
America. Twelve horses of the omnibus class can easily move a gun,
with its carriage and limber weighing about 4 tons, provided the
country is fairly easy. Major Callwell again points out that, owing
to the great usefulness of medium guns when drawn by oxen, an
idea has sprung up that as long as such guns can move at all this is
sufficient. This he reminds us is a great mistake; long-range guns
must not come to a standstill every time there is a difficult piece of
ground to pass. We cannot expect to move them as fast as field
guns, but to paraphrase the old Irish saying, we may remark: "Be
mobile, and if ye can't be mobile, be as mobile as ye can."

The requirements for a carriage for these medium guns are:—

- I.—Strength and durability as for all gun carriages.
- II.—Lightness, in so far as it is compatible with I.
- III.—Stability.
- IV.—Some powerful means for checking recoil.
- V.—A powerful brake to control the carriage itself when moving
over bad ground.

One and two speak for themselves.

GUNS AND HOWITZERS.

VE, D.S.O., ROYAL ARTILLERY.

of a type intermediate
and coast defences,
be taken into the

Artillery,
Royal
1897

"Linesman" thus describes this ponderous weapon :

And behind them groans a 4'7" gun, long of snout, elephantine of carriage and wheels, Jack ashore in every lurch of his rolling gait behind the plodding oxen.

It fired however 2,873 rounds at various times.

Then there was the 6" gun, which was a clumsy lumbering weapon, and was hardly ever used, only 308 rounds having been fired.

Next comes the 5" gun. Major Callwell says :—" This gun, firing a 50-lb. shell, was found to fill most requirements admirably in South Africa. Accurate up to 7,000 yards, fairly accurate up to 8,000 yards, and serviceable at big targets at ranges up to 11,000 yards, it proved an almost ideal weapon when employed sensibly."

It required a team of 20 oxen, but when Sir Redvers Buller started from Standerton to reach the Delagoa Bay railway, two of these guns were horsed and proved mobile, even in the mountains near Leydenburg.

The last returns prepared give 5,153 rounds fired from this nature of gun.

The 12-pounder naval gun is not, properly speaking, a medium gun, but it had a very long range, and from this fact, and because it was moved by oxen, it is classed among the medium guns. It became indispensable to us because the Boer field gun (7'5 c.m. Creusot) greatly outranged our 15-pounder. The 12-pounder fired 5,193 rounds.

HOWITZERS.

6" Siege Howitzer.—This piece fires a shell of 120 lbs. weight. Major Nicolls is of opinion that owing to its heavy ammunition and its platform, it is too heavy for field work, while its limit of range prevents it from being an ideal piece for siege work. As regards the platform. I think that on hard ground it can often be fired without one. Its range however (5,200 yards), puts it out of date.

5' Howitzer.—This is considered too heavy for a field howitzer, while its shell weighing 50 lbs. only is too light for other purposes for which a howitzer is needed ; its range again is far too small for modern requirements, for with an elevation of 42° a range of 4,900 yards only can be obtained, while the time of flight is thirty seconds.

Despite these drawbacks it has been much used, owing probably to the fact that being worked by field artillery with horses, it has been far more mobile than the cow guns proper. The latest available returns show that over 9,000 rounds have been fired from it.

There remains one howitzer which seems to show what may be done in the way of a lighter piece which shall throw a very heavy shell. This is 9'45" howitzer made by Skoda of Pilsen. The weight behind the team is only 4½ tons, while the shell weighs no less than 280 lbs. Unfortunately this piece was not mounted on a travelling carriage,

and could not be brought into action in less than from one to two hours, therefore it was not used.

We have seen then that not one of the medium guns or howitzers that we have used in South Africa has quite satisfied the requirements of modern warfare, for the 5" gun, though in many ways satisfactory, was a shade too heavy, and the fuze did not burn long enough. The gunners who have been engaged in the Boer war have written out their views for us; let us hope that the manufacturers of ordnance will be able to turn out the weapon we want.

The weight of the gun and limber combined must not exceed 4½ tons at the outside. The gun should fire shrapnel, common, and lyddite, and should possess a time fuze capable of opening a shrapnel shell at ranges of 8,000 yards. Such a long range may seem excessive to those accustomed to European countries, but when laying down the requirements of a gun for the British Army, we must prepare for all contingencies. We may have to fight again in South Africa, most probably shall have to do so in Afghanistan or Abyssinia, while another campaign in China is not out of the question. In the rarefied air and open ground in such countries as these we may have again to fight at the ranges to which our army has grown accustomed in South Africa.

As regards the question of draught Major Callwell says that practically horses or oxen are the only animals that can be used. He does not mention mules. I cannot help thinking that big draught mules can be easily got from Spain, France, and both North and South America. Twelve horses of the omnibus class can easily move a gun, with its carriage and limber weighing about 4 tons, provided the country is fairly easy. Major Callwell again points out that, owing to the great usefulness of medium guns when drawn by oxen, an idea has sprung up that as long as such guns can move at all this is sufficient. This he reminds us is a great mistake; long-range guns must not come to a standstill every time there is a difficult piece of ground to pass. We cannot expect to move them as fast as field guns, but to paraphrase the old Irish saying, we may remark: "Be mobile, and if ye can't be mobile, be as mobile as ye can."

The requirements for a carriage for these medium guns are:—

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- III.—Stability.
- IV.—Some powerful means for checking recoil.
- V.—A powerful brake to control the carriage itself when moving over bad ground.

One and two speak for themselves.

Stability.—Officers who go out with the garrison companies here in Quetta can speak about this. Once upset, these weapons are very troublesome to handle.

As regards brakes. With the 6" howitzer now in Quetta we have a brake acting on the tyres of the wheels, which enables one man to control the carriage when going down steep gradients. Callwell recommends some such brake for checking recoil, but an officer who worked with these howitzers in South Africa tells me that these brakes were never used for such a purpose. The question seems to require further investigation. One more point. The carriage must be designed to carry its guns safely in the firing position, and this without lowering the axis of the trunnions too far, because for tactical reasons the general level of the gun should not be below that of the heads of the men working the piece.

The carriages should all be fitted for horse, ox or motor draught. The last has not yet been applied to guns, but undoubtedly it will be before very long, in countries where good roads exist. Probably in this part of the world, where the ground generally speaking is dry and hard, motor draught would be suitable.

AMMUNITION.

The result of firing in South Africa seems to indicate that with medium guns, shrapnel shell will be employed almost exclusively. There is nothing new in this. Our gunners had long ago recognised the fact, and made arrangements accordingly. In the equipment tables for the new mountain gun, shrapnel shells are practically the only ones carried. The only other projectiles are a few star shell and some rounds of case.

It has been found, even with medium guns, that you cannot do much in the way of destroying earthworks, or wrecking guns and material. In the long run we must come back to shrapnel, the mankilling projectile.

The weight of the shell will probably be about 50 lbs.; this is sufficient to cause the enemy a good deal of labour in preparing their parapets and head cover, while the stones and pieces of rock sent flying by the impact of shells of such weight add greatly to their destructive effect.

There is one other most important point connected with the ammunition, and that is that we must have a fuze that shall be capable of opening a shell up to ranges of 8,000 yards.

"The want of an effective time fuze," writes Callwell, "was a veritable millstone around the necks of commanders of heavy batteries in South Africa. The Boers burst shrapnel at ranges over 10,000 yards,—on one or two occasions with dire effect,—and the fact that their time fuzes were very untrustworthy must not be put forward as a plea that reliable 30" time fuzes are an impossibility.

I may mention here that the fuze used with our mountain guns burns for about thirteen seconds, so that one burning 30 seconds would be a considerable advance.

The number of rounds to be carried may be put down at 100 per gun in first line. This should suffice for a day's hard fighting if a check is kept upon the expenditure.

SPECIAL EQUIPMENT.

In addition to the ordinary gun stores, that is, sights, handspikes, lifting-jacks, spare parts, etc., medium guns will require certain articles of special equipment. Entrenching tools and sandbags are indispensable; spare drag-ropes and various kinds of lashing will be needed, also scotches specially made to be placed behind the wheels to help in checking recoil. There must be also a liberal supply of telescopes and mekometers.

HOWITZERS.

It has been seen that none of the howitzers we actually used in South Africa gave entire satisfaction. For field work we require a howitzer that shall have a range of from 7,000 to 8,000 yards and that the howitzer with carriage and limber shall not weigh more than four tons. It is desirable that the recoil should be absorbed in some form of jacket, though this adds considerably to the weight.

CARRIAGE.

The carriage should be of the type of that for the existing field howitzer, but it will have to be stronger and consequently heavier, for the howitzer will be more powerful, and fire a heavier charge. There must be brakes on the wheels to assist in checking recoil and for use on the march.

AMMUNITION.

Callwell recommends that the ammunition for this howitzer should be interchangeable with that of the medium gun; that is 50 lbs. in weight. Nicolls however suggests 80 lbs. as the weight for the howitzer shell, and as all agree that at least half of the ammunition for the howitzer shall be high explosive shell, 80 lbs. seems the better weight. It is I believe acknowledged that the full effect of lyddite and other high explosives is not attained when they are used with a light shell.

CARRIAGE OF AMMUNITION.

As regards this point, Callwell says that in South Africa, practically all the ammunition should have been carried, partly on mule wagons and partly on ox wagons, which would have caused an immense saving in forage and rations. This recommendation is borne out by the experiences of 6th Company, Eastern Division, which

carried its ammunition in South African buck wagons, and was able, as we shall see later, to accompany columns in long marches over all sorts of country.

As to the amount of ammunition to be carried most authorities agree that 120 rounds per piece will be ample in the first line.

It is satisfactory to find that most writers agree on one very important point, namely, that howitzers should fire shrapnel: probably half shrapnel and half high explosive shell would be needed.

A long time fuze is required just as much for the howitzer as for the medium guns. The Boers fired shrapnel from their 4.7" howitzer at ranges of 7,000 yards; it caused many casualties in spite of the fact that the bullets were small.

May, in his retrospect, says: "Granted, that owing to the highly curved trajectory, and low remaining velocity, howitzer shrapnel bullets have only a narrow zone of effect, the question remains whether even then they would not have a greater area of destruction than lyddite shells at present possess." He gives instances of the use the Boers made of their 4.7" howitzer at the siege of Ladysmith. Once at between 6,000 or 7,000 yards range it bombarded the camp of the 18th Hussars, hit three men, and compelled the camp to be moved. Again in a fight at Rooi Kopjes on July 24th, 1900, three men of the mounted infantry were killed and wounded by its time shrapnel at a range of about 6,000 yards. Now all this is very interesting to gunners because we used to think that at long ranges shrapnel bullets would have so little remaining velocity that they would do little or no harm. But we must modify our views on this point, and having learnt what can be done by a howitzer firing shrapnel, we must not rest satisfied till we can get one that can fire shrapnel at long ranges.

SPECIAL EQUIPMENT.

As howitzers fire at high angles of elevation, and from behind natural cover, it will not be necessary to have so much in the way of sandbags and entrenching tools as with medium guns. But telescopes and mekometers must be supplied on the same liberal scale as for guns.

ORGANIZATION.

Ordnance of the nature under discussion will be best organized in batteries of four pieces each, divided into two sections, each section complete in itself with its specialists and its instruments, such as telescopes and mekometers. It does not appear to be necessary to form separate batteries and to maintain them absolutely distinct and complete in peace time like siege companies and mountain batteries. Theoretically no doubt this would be best, and many officers, would desire to see batteries of these formidable weapons organized on the lines of horse and field batteries as mobile units. "If," as Callwell says, "expense were no object, and personnel unlimited, the creation

of such batteries would not be inexpedient." But looking at the subject practically we may say that there is no need to form batteries of this kind as permanent units, and the proper method of meeting the difficulty is by organizing them out of garrison artillery companies.

Personally I agree with Callwell and, as I shall show later on, I am applying these views to the garrison companies in Quetta. But it is not yet definitely settled whether these batteries of medium guns and howitzers are to be manned by the mounted or dismounted branch of the artillery. Lieutenant-Colonel May points out that when employed with a field army, the tactical duties of these guns are closely connected with those of the other arms, and in such duties the officers of the mounted branches are naturally better trained than those of garrison companies. On the other hand, if this newest form of artillery is handed over to the dismounted branch the latter will have more chances of seeing active service. On this point Colonel Johnson aptly remarks:—"Without opportunities of distinction in war, no combatant military body can have either *esprit de corps* or *amour propre*, and the lack of these means ruin." If then these new duties can be taken up by garrison companies in addition to, and without interfering with, their own, surely this will be the best solution.

We must not however have a recurrence of such incidents as the following:—

A certain garrison company only found its equipment, a hastily improvised one, on landing in South Africa. Yet after hurrying up from the coast under great pressure, it was hotly engaged in the Tugela within a week of its reaching the front.

What then are the steps to be taken? As May says: the garrison gunner must return to the rôle of Jack-of-all trades which he has always readily assumed, and be as ready in the future to turn his hand to anything, as it is his proud boast that he has ever been in the past.

To help him in this laudable ambition, the following practical steps are needed. A certain number of garrison companies must be told off in peace time to be ready to work medium guns in the event of war. They must have their equipment handy, and directly under their charge. They must from time to time have placed at their disposal the transport necessary for mobilizing, for drill and training, and they must be practised with the other arms.

ESTABLISHMENT.

The peace establishment of a coast defence company adapts itself very well to the requirements of a battery of four guns. Owing to the exhausting ammunition work which a heavy day's fighting involves, the entrenching which is often indispensable, and the need for double detachments if the battery is in action for several hours, a liberal establishment of gunners is essential.

TRAINING.

The fact of the equipment being handed over to a company will assure that the company is proficient in the drill of the gun itself.

"It cannot be alleged," says Callwell, "that the garrison gunner who is expert in the varied ordnance of coast fortresses will find any difficulty in learning all that is requisite about any piece which may be decided on as the medium gun of the future."

But this is only the beginning of what the company must learn before it can take the field. The following orders that I have drafted for the instruction of the companies at Quetta will, I hope, convey some idea of their new duties:—

- I.—Garrison companies will take out guns for route marching etc., once a week.
- II.—On these occasions the officers will be mounted, and the company will always parade with havresacks and water-bottles.
- III.—The company commander will see that the portable telescope is always taken out.
- IV.—He will also take out a map—scale 2" to the mile—for checking range-takers.
- V.—Range-takers and signallers will always parade with their instruments and be practised on these occasions.
- VI.—To train men in observing an enemy, one non-commissioned officer and one man will be sent to the top of the fort, with map, telescope, and note-book, to see and report on movements of the company.
- VII.—The guns or howitzers will be brought into action at least once on these marches for drill and fire discipline.
Special attention to be paid to keeping under cover while coming into action and while in action.
- VIII.—Once a month at least the company will be trained in preparing gunpits or epaulments.
- IX.—Officers commanding companies should endeavour to get one company at least of infantry to act as escort on these marches.
- X.—Not less than twelve gunners are to carry carbines, so that a small body may be at hand to beat off a sudden raid of cavalry. By this precaution the escort will be left intact to manœuvre clear of the battery.
- XI.—Companies must also be practised in getting over bad ground with the bullocks, double teams being used if necessary: occasionally hold-fasts and tackles to be used for very steep slopes.

Of course at Quetta we have exceptional facilities, for the bullocks are available, and the armament of the defences is at hand for training with. But I think that with similar measures coast defence companies at home can be trained for work with medium guns in the field. Such action is certainly somewhat of a compromise, but it is hard to see how men and money can be got for special batteries of these medium guns if they are maintained as separate units like siege companies and mountain batteries.

To complete the training herein suggested, garrison companies must take part in manœuvres with the other arms, and in such manœuvres they must fire cordite. At present black powder is used for all blank charges, but this gives a totally wrong idea of what would happen in actual warfare. The difficulty of course is that cordite charge causes so much wear and tear on the bore of the gun, but perhaps it would be possible to invent a cheap form of tube or lining to be inserted in the bore, and thus to save the bore of the gun itself.

TACTICAL EMPLOYMENT.

There is an old Latin saying: "*Fas est et ab hoste doceri.*" Let us apply this and see what the Boers taught us as to the use of long-range guns. Let us begin at the very beginning.

We have seen how in the very day after the battle of Talana Hill, a Boer howitzer opened fire on our camp at a range of 8,000 yards, and how it distressed and annoyed our wearied men. "Tired men," writes May, "settled down in camp, only to be disturbed by the hideous whistle and crash of the hated visitors. Even darkness did not always give security, for in a mountainous country it was often impossible to select a site for a camp which in addition to the other requisites, such as water for the men and grazing for the animals, was also five or six miles distant from commanding ground not held by our troops. And often at the latter range did our enemies destroy the quiet and repose which was essential to the health of our wearied troops. Not seldom either did we find our line of march commanded by one of the great guns, which, from a distance such as ensured its immunity from molestation, was enabled to harass and delay our progress. Even though the troops might get into extended formation, and press forward, the baggage and ammunition had to suffer patiently, and to wait till the obstruction had been cleared away. On such occasions, the order of march is disturbed, the plan of day is destroyed, and the absence of rations and blankets at the end of the march sends many a man to a cold and hungry picquet. When a river has to be crossed by a bridge or ford, the obstructive power of a long-range gun may be immensely added to, while the passage of a defile or safety of a line of railway may also very easily be imperilled. Those who were shut up in Ladysmith will remember what a menace in all these respects the 6" guns on Bulwana, Gun Hill, and Telegraph Ridge constituted; how every exit was barred by them every camp overlooked, every watering place or tempting stretch of pasture, commanded."

Colonel May goes on to point out that it will not be possible to utilize long-range fire in Europe to the same extent as was possible in South Africa. Rarely will atmospheric conditions allow such extensive view, and seldom will the ground be so open and clear of trees as the veldt. But still commanding sites will be found in all countries. A road, a railway line, a defile or a camp frequently present targets that are often well defined, or large in extent, and on these it will often be possible in any country to bring fire to bear at ranges which, until we learnt better in South Africa would have been regarded as impossible. As instances of how we used our heavy guns, May tells us that at Volksrust, a 4.7" gun dominated the road to Wakerstroem and kept it clear for convoys, and long-range guns crossing their fire above the railway to the heart of the Transvaal guarded the line of rail. Again in April 1900 the camps at Elands-laagte were protected by our heavy guns against long range fire from those of the enemy.

Although uses such as these alone might justify the introduction of medium guns, yet these are but subsidiary uses.

In attack, for instance, we shall need them. When the army under General Buller captured the Boer position at Almonds-nek we read that the fire of four 4.7" guns and six long 12-pounders at a range of 3,000 yards produced an effect that was most demoralizing. Great pieces of rocks and stones were sent flying in all directions, and the majority of the Boers cowered down behind cover, and thought not at all of using their Mausers while the tempest raged over head; the result was that the position was captured at a very small cost. Again at Pieter's Hill a howitzer battery continued to drop its shells into the Boer trenches till our infantry were within 100 yards of them, and here again the position was carried. At Monte Christo a battery of heavy guns firing from a range of 8,000 yards poured a heavy fire on the Boer position, and kept it up till our infantry were near enough to smell the lyddite fumes of our own shells. And eventually the hill was cleared of the enemy with very little loss.

As the enemy holding a position will generally be well entrenched or well protected by natural cover, howitzers will perhaps be more useful than guns in the attack. In the early stages buildings, defence works of elaborate design, and hostile positions among rocks and boulders, will form specially favourable targets for howitzers with their high explosive shells.

Assuming that the attack is adequately supported by gun fire, the duty of howitzers during an infantry assault is to search the ground immediately in rear of the hostile fighting line, where supports and reserves will be. Owing to their curved trajectory howitzers can maintain their fire upon the enemy's position better than guns can with safety, and full advantage should be taken of this when the crisis comes. Guns firing at very long ranges can also use searching fire, for at such ranges the slope of descent of the shell becomes very steep. For instance at 7,000 yards the slope of descent with a 5" gun is $\frac{1}{4}$, which is very good for searching fire, and guns may purposely be used at these long ranges on special occasions.

But 3,000 yards is a much better range for guns. The officer commanding the battery can see what he is doing and can keep in touch with the tactical developments. One great disadvantage of long range is that the enemy can hear a shell coming, and can duck under cover. Callwell says that we played the game of long bowls much too often in South Africa, and May reminds us that whatever gun is in question, short ranges are better than long ones, and decisive results are not to be looked for when men cannot see what they are doing with ease. And when the reconnoitring phase of action is over, the heavy artillery should close in if possible to ranges between 3,000 and 4,000 yards.

ENFILADING FIRE.

Owing to their long range, medium guns are well suited for bringing enfilading fire to bear, and positions should be sought which will give such guns full scope in this direction.

PROTECTING A FLANK.

They are also well suited for protecting a flank. Thus at Rooi Kopjes on July 24th, 1900, a 4.7" well posted covered our camp and right flank, and was the pivot on which our left moved forward. When we forced Botha's pass four naval guns on Van Wyck secured our left flank, and rendered us safe from hostile enterprise there.

CONCENTRATION OF FIRE.

Concentration of fire is often desirable, nay necessary, when the enemy's position is thoroughly known, and the assault of our infantry is in progress, but the guns themselves may be dispersed. Callwell goes so far as to say that in nine cases out of ten, the splitting up of a 4-gun battery is the proper tactical arrangement. Personally I think this splitting up may be over done. If carried to excess it will result in a loss of fire control, or, in other words, the Commanding Royal Artillery will find it very difficult to get orders conveyed to his scattered units. Major Ducrôt points out that owing to the long range of modern guns, it may be found feasible to divide the artillery into two or three main groups. But the power of concentrating their fire upon one objective should be adhered to. If we look at the positions of our artillery at the battle of Pieter's Hill we find that the guns are in two principal groups; and this is very instructive, for Pieter's Hill was what we may call a pitched battle, and one of a type likely to occur between thoroughly organized armies.

THE DEFENSIVE.

When acting on the defensive, the rôle of medium guns is fairly obvious.

Their first duty is to sweep the avenues of approach and if desired to compel the enemy to deploy early. Next in importance is the task of securing the flanks of a position, and forcing wide turning movements on the enemy.

If the attackers give the defenders' guns a very good target, these may open a very heavy fire, but it is desirable with some guns along the defensive line should reserve their fire, with the view of suddenly opening on an enemy who does not expect their existence.

Guns and howitzers will probably be scattered in pairs along the defensive line, which with modern weapons will be much more extensive than of old, in comparison with the number of troops employed.

Howitzers will have great opportunities on the defensive; their special rôle will be to search the hollows, which will be found on almost every battle-field in front of the defender's position, for in these the assailants will certainly congregate. To ensure that the shells of the howitzers shall fall in the right place, the ranges must be very carefully taken beforehand and in defence it will generally be easy to arrange for an elaborate system of observation of fire, and for means of communicating the position of the enemy.

Owing to their high angle fire, howitzers will nearly always be completely concealed on the defensive; with this advantage and that of knowing the ranges, howitzers should be able to play havoc with the attacking guns.

PURSUIT.

In pursuit a proportion of medium guns should always be pushed well to the front. The failure to appreciate this tactical rôle of long-range guns in pursuit was one cause of the Boer artillery and baggage escaping capture during their retreat from Bergendal to Pilgrim's Rest. So says Callwell and his idea is, that such guns should push steadily on waiting for a decisive opportunity of firing into the main body or into their baggage and artillery columns. These must keep to the roads, and the heavy shells of medium gun should cause them much loss. Keeping this idea in view, the big guns should not waste time in fighting the rear guard. That is exactly what the enemy want. The medium guns should ignore the rear guard, and try to reach the main body over their heads; this their long range should enable them to do. If on the other hand the rear-guard endeavours to protect the main body from this long range fire, then it must hold a position some four to five miles from the main body, which will add greatly to their risk of being cut off.

Howitzers will not come into play much in a pursuit; their great point is that they can fire from behind cover, and that with their curved trajectory they can search reverse slopes, hollows, etc.

But this is not the sort of work that one may reasonably expect in a pursuit, and it will rarely be wise to hamper the pursuing force with howitzers as well as medium guns.

IN RETREAT.

Medium guns employed with the rear-guard run great risks of being captured. The Boers however in their retreat towards Leydenburg

certainly made use of their heavy guns to fight rear guard actions and with some success too. Callwell relates that the day after Bergendal, Lord Dundonald's mounted brigade with the Chestnut troop was pursuing the Boers, when they were brought up short by a number of Boer guns four miles further on. Callwell's 5" guns were sent up to give a hand, but the Boers had the range exactly, and dropped a shell into one of his teams, killing three horses, and wounding others, as well as a subaltern. As soon as our guns opened fire, the Boer heavy guns were withdrawn; time however had been gained. Darkness came on, and the Boers only lost a few waggons out of all their baggage.

The open country and clear air of South Africa here again helped the long-range guns, but as a general rule slow-moving guns are out of place in a rear guard. Still should there be a defile through which the pursuers must come, long-range guns on commanding ground, firing into the defile, will certainly delay pursuit. They may also be very useful in covering the retirement of an army when the enemy is disinclined to press on.

The same remarks may be applied to howitzers in retreat, owing to their lack of mobility they run the risk of capture. At the same time occasions arise when from a place of perfect safety, they can retard the pursuit.

MISCELLANEOUS POINTS AND FIRE TACTICS.

We now come to the finishing touches, minor points, that taken separately appear small, but which all tend to the efficient service of the gun. And first we may deal with the place of medium guns in the line of march. Some of the heavy guns should be well up to the front, for the retaining powers of the magazine rifles ought to enable our infantry to protect them from surprise, and they will often be required. If a defile has to be traversed, a river forded, or a bridge crossed, and the enemy should bring fire from a long range to bear, a countervailing force is at once needed, and the long ranging guns will be sorely wanted. Unless these guns are near the head of the column the moral, if not destructive effect, of hostile fire playing unchecked on our helpless troops may be considerable.

May tells us that during the operations which culminated in the capture of Botha's Pass, and the turning of Laing's Nek, the system of marching the heavy artillery close to the head of the main body was adopted with marked success. At Gansvlei the ponderous 4.7" guns were in action before any others. And at Almonds-nek the great battery of garrison artillery and the naval brigade, covered by the fire of the battery of horse artillery with the advance guard pushed in at once to about 3,000 yards from the enemy's position and began to pound it before any of our infantry were deployed for the real assault.

O—11

In fire tactics first and most important is the way of coming into action with medium guns and howitzers. It is obvious that whether drawn by horses or oxen, batteries of these heavy pieces must offer a large and, in many cases, a slow moving target to the enemy, and one that may in a very short time receive vast damage, for the teams are particularly easy to see, and most vulnerable.

In every case, therefore, the greatest care must be used in coming into action to take every advantage of cover. In "Artillery notes from the Veldt" Callwell writes as follows :—

"The teams must if possible be kept out of sight. They offer an admirable target; they attract the attention of distant long-range artillery, and experience in this war has shown that a single shrapnel will obliterate six horses and leave the guns helpless. Guns must if possible be run into position by hand and in succession. At the outset the great point seems to be to get to work without the enemy knowing exactly where you are, or being able to get your range until you are comfortably settled. A single well concealed gun will wipe out a whole battery, if this is brought into action in a bungling fashion."

At Vaalkrantz indeed many of our guns were in the open, on ground commanded by concealed guns on the enemy's side. But they suffered little harm. This however was due to the Boer time fuzes not acting, and must not be taken as a guide for what will generally happen. Cover is just as important for guns as for infantry, and unless guns can be brought up unseen, they will probably be knocked to pieces.

It is much easier to find a covered position for howitzers than for guns, because the former fire at such a high angle.

INDIRECT LAYING.

If then guns are as often as practicable to be brought into action behind cover, it follows we shall generally have to use indirect laying for the target will not be visible over the sights. In this case the line of fire is got by laying out aiming posts, and the elevation is given by clinometer. The only disadvantage of this method of laying is that you cannot quickly change your target. In an attack this does not much matter for you may have to lay for hours on the same target. These points, namely covered positions for guns and indirect laying, are well illustrated in the handling of the 61st Howitzer Field Battery at the battle of Pieter's Hill. This battery was placed behind Green Hill, the top of which was as high as Pieter's and Railway Hill. It was therefore an excellent observing position. There was plenty of cover from view behind it. The summit and reverse slope were well suited for placing aiming posts, and the ground on which the howitzers stood was firm and smooth. Railway Hill and Hart's hill were only 2,500 yards distant, so that the battery

commander could see plainly what he was doing. The fire was continued on the Boer trenches till our men were within one hundred yards, and their bayonets could be seen glittering. An officer of the South Lancashire afterwards told the major of the battery that his men had orders to show their bayonets well above their heads as a signal to our artillery to cease firing. Three final shots were fired from the howitzers, and only a minute later our infantry charged and carried the trenches amid the waving of white rags and uplifted hands on the part of the Boers, and wild cheering from our side, as all realized that this meant the relief of Ladysmith, while not a man forgot that it was the anniversary of Majuba Day.

The fire of his battery could not have been maintained up to the last minute with such confidence had not the commander known not only that his battery was perfectly safe behind its cover, but that the men did not even know of the exciting events that were taking place, or how vitally important their fire had become. In the absence of any disturbing factor accurate laying could be safely counted on.

But such positions as the above may not always be available. Other positions will come under one of the following headings :—

- (a) On the reverse slope, targets visible over sights.
- (b) On the forward slope.
- (c) In the open.

Position (a) has this advantage, that while affording cover, it enables us to change target quickly. But guns thus placed will probably soon be located, unless much artifice is used in concealing them, for their position will be given away by the dust raised by the discharge of the guns, and the recoil of the wheels, or by the movements of the detachment. The Boers used to water the ground, or to spread out skins of freshly slaughtered cattle to avoid this dust on discharge. When one is on the defensive, such measures are easy enough, and should be adopted.

It is worth remembering also that long grass, brushwood and boulder^s in front of a gun position are a distinct help in keeping down the dust, as well as on account of the screen they afford. On a damp day a gun screened to a certain extent by foliage, or rocks, is very hard to locate if the detachment kneel. With all guns, in our service in India at any rate, the detachment kneel whenever they can.

Positions on a forward slope or in the open will never be taken up except in cases of the direst urgency.

GUN PITS, ETC.

Gunpits were much used by us in South Africa. There the ground is hard and except in the rainy season very dry. Consequently many of the objections that are of vital importance in Europe did not exist in South Africa. The wheels did not get embedded in soft soil, and the arrangements for checking recoil acted as well in a gunpit as on the

natural surface of the ground. Before however commencing to make artificial cover for his guns, an officer must consider whether he may not do more harm than good by so doing, as the erection of epaulments, or the making of gunpits, may only disclose his position. No hard-and-fast rules can be laid down : the question must be decided by the circumstances of the moment.

May thus describes a gunpit that was frequently used :

" A semi-circular curve was struck with a radius of 18 feet, and the floor of the pit sunk inside this for $2\frac{1}{2}$ feet, a trench 2 feet by 2 was then cut round the outer edge of the floor at the sides, for men and ammunition. Beyond this the parapet, two feet high was built at least 6 feet thick at the top, the extra earth being got from a trench in front. Grass and branches scattered over it judiciously soon rendered this pit quite invisible to the enemy."

RANGE-TAKING AND HUSBANDING AMMUNITION.

Careful and accurate range-taking becomes more important than ever with medium guns and howitzers owing to the necessity of husbanding every round of the costly and weighty ammunition. For the same reason weapons of this nature should be reserved for use against important objectives, and not for what we may call sniping. As regards this point I must quote from the essay submitted by Lieutenant-Colonel Johnson : " One may venture to suggest," he remarks, " that heavy guns are neither intended nor suitable for sniping." The following conversation occurred daily between a general officer commanding and an officer commanding two 5 " guns :—

" Do you see that patrol ?" (generally about 8,000 yards distant and consisting of half a dozen men).

" Yes ; sir " (*pause*).

" Do you think you could hit them ?"

" I might, sir " (*longer pause*).

" Give them a couple of shots."

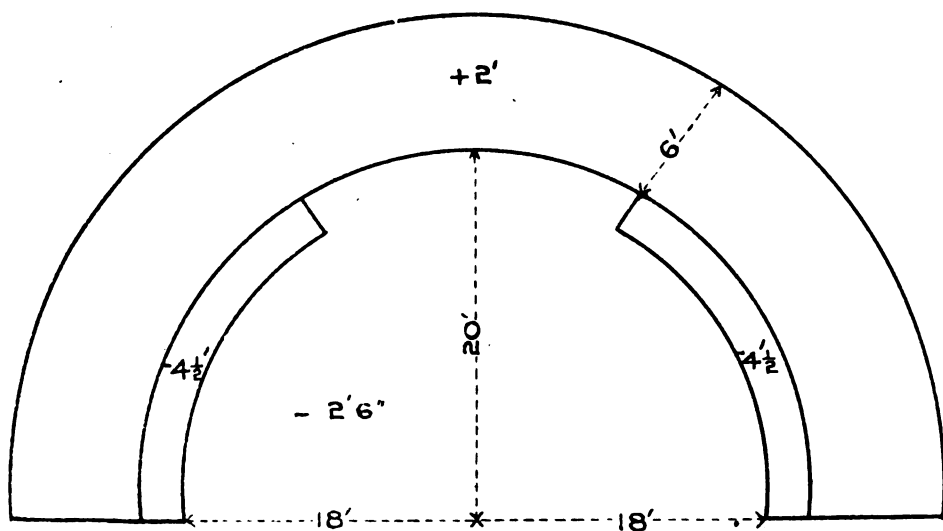
Off went a hundred weight of ammunition, the distance of the base of supply being over 6,000 miles.

ESCORTS.

The question of escorts for our artillery is a difficult one. Even Callwell, who has formed opinions on most questions, admits that this point requires solution. Infantry cannot keep up on the march if the guns are horsed. Mounted troops are thrown away hanging back with the guns. For horse and field artillery the solution of the problem seems to be the addition of a certain number of men to the establishment, so that the battery can train and form its own escort.

The present system is not satisfactory. No commander of a cavalry or infantry unit can like having to detach part of his men as escort to a battery just when he is going into action, and it is always

Gun-pit used in South Africa.
for Medium Guns.



From May's "Retrospect on the S. African War."

possible that the party thus detached, may not know exactly what is wanted of them. If however the escort formed part of the battery and always drilled with it, the above difficulty would be removed, while the extra expense is more imaginary than real, for the escort must be formed from somewhere, and if taken from a cavalry or infantry unit, that unit is weakened.

There are one or two points still left that I should like to touch on. Officers of the other arms have often remarked that our artillery had much difficulty in locating the guns of the enemy: Well, Major Hamilton Gordon, who commanded the 61st Howitzer Field Battery in 14 days' fighting (14th to 27th February 1900) on the Tugela, says, that as far as could be judged the enemy only once knew where his battery was. I mention this to show how great is the difficulty in locating guns nowadays when they are properly handled, and it is owing to this difficulty rather than to our stupidity that the Boer guns were not located.

A short account of a garrison artillery company in the field printed in the Journal of the Royal United Service Institution shows how two 5" guns operated for five months with an active field force. During this period they marched 970 miles over all sorts of country accomplishing on some occasions for several days together an average of from fifteen to eighteen miles a day; on other occasions from twenty-two to twenty-five miles in a single day.

On the 27th June 1900 twenty-five shells were fired at a range of 5,000 yards; the enemy's fire was silenced and a pom-pom disabled.

On the 7th July near Bethlehem 200 rounds were fired, in some cases up to ranges of 9,000 yards. General Clements praised the company warmly for the service it had rendered in subduing the hostile artillery fire, and in supporting the infantry attack. One of the enemy's guns was disabled and subsequently captured.

On the 22nd July at a place called Slabbert's Nek, the Boers were entrenched in a very strong position with their artillery in the centre.

The 5" guns pushed on to 3,000 yards and maintained a vigorous bombardment. The shooting proved to have been excellent, as the enemy's gun epaulments were badly knocked about. One shell burst in an epaulment, damaged the gun and blew a French officer in charge to pieces.

When General Hunter moved out of Fauresburg on the 28th July these guns took part in the movement to envelop Prinsloo's commando. A Boer Long Tom seriously hindered our advance, the 5" guns were brought up and the fourth shell burst in Long Tom's emplacement, wounded every man in the detachment, and silenced the gun for the rest of the day. When Prinsloo's force surrendered, several of his officers wished to see the guns, the fire of which they said had

greatly hastened their surrender. One was overheard to remark with undisguised satisfaction—"Good-bye to the d——d lyddite guns."

As Lieutenant Seton who writes the above account truly remarks :—

"Performances such as these seem to demand that we should pay the greatest attention to this new development of artillery."

A NEW SCHEME OF NAVAL DEFENCE.

A GREAT NAVAL COMBINE.

BY GEO. C. CRAIG, AUTHOR OF "FEDERAL DEFENCE OF AUSTRALASIA," SYDNEY.

Since writing my last military paper on how Australia could help India the Defence Bill of Sir John Forrest has evidently been withdrawn, and what appears to be a makeshift organisation, to suit the Labour party now in the Federal Parliament, has been adopted. The conscript idea of Sir John Forrest has been given up, and the army of the Commonwealth has dwarfed itself down from over 920,000 men of all arms to a war footing of over 40,000 men. Taking the two schemes together, the one is just as unsatisfactory as the other. But no matter what one accommodating minds say, the fact remains that with an army of 920,000 or 40,000 men, in the event of war with Russia, Australia and New Zealand could, with our sea power intact, throw 10,000 mounted men into India, at the disposal of the Commander-in-Chief in India. When the Empire called, no power in the Colonies would dare to stop the men from volunteering, just as they did for South Africa. Sir Edward Hutton denies to me that he ever favoured such an idea. I take his denial with respect, but if he presumes to lean upon the blundering politicians of the Commonwealth, it is no misleading of public opinion here or in India, that India can rely upon Australian help.

The future true organised defence of Australasia must consist of three army corps, *i.e.*, the first to be composed of young men and the regular force, the second to be composed of the active militia and volunteers, and the third to consist of a general call to arms upon invasion. The details of this organisation I have given elsewhere. I care not what hostile critics rise up against my scheme, as when the present drought is over, all the contingents return home, and the young heroes get settled back into colonial life and character, such an offensive-defensive scheme of army organisation must be adopted. Indeed the General Officer Commanding himself is a firm believer in an offensive-defensive army. I hope he will not contradict this.

So much in sequence to military defence. But as the navy is the first line of defence a radical and complete change of naval direction, outfit, strategy, mobilisation, manning, and general preparation for sea warfare on this side of the line must take place, if a powerful blow must be delivered in the Far East, the Austral-Pacific, or the Indian Ocean. The time has come—if our colonies are "one all in all," to quote Mahan and Tennyson—when the disjointed and scattered fleets of the Indian, China, North Pacific and Australian stations must

act in combination, with the view to keep down raiding cruisers or fleets in being, or to deliver a powerful Nelsonic blow in Nile or Trafalgar fashion in any of these four seas. This is an age of reform in naval as well as in military organisation.

To combine the four fleets in the British naval defence of the Southern Hemisphere into one grand co-operative fleet, under an admiral of the fleet, with a responsible Colonial Board of Admiralty (under the Imperial Board in London) with the head-quarters in Sydney, I hope will not take the breath away from the several Commanders-in-Chief of each said station. The hostile aggression of large naval powers in Chinese and Pacific waters; the rise of such naval powers as Germany, Japan and the United States in the Pacific, together with the concentration of the warships and transport cruisers of Russia in Corean and Siberian parts leaves a nasty taste in the mouth. Mr. Shaw, a Minister of the United States, is still officially uncontradicted in his spread-eagle speech that the United States claim all the Pacific, even to the obliteration of the Union Jack, just as a Russian Prince once orated that Russia must have "all Asia." The context of such speeches are large orders—easier said than done. In one sense war has been secretly declared against the trade, commerce and expanding colonies of the Empire. The genius of a Tallyrand, a Bismarck, and a DeWitte has been at work for years. Bismarck began it with a sneaking regard for our trade and colonies. Russia's task has been to envelop India and destroy British trade and spheres of action in China. France has got Madagascar and enlarged her Indo-Chinese territory. She now wants New Hebrides. America throws up Cuba, whilst she bags islands in the West Indies, and holds firmly the Philippines, Guam, Pago-pago and other naval bases. Germany is in New Guinea, Samoa, and strongly fixed in the South Seas, within striking distance of many British possessions. The influence of the Panama Canal is a new feature to be dealt with. Japan is our ally, but its practical help to the British Empire has yet to be proved. The battleships, cruisers, and transports of France, Russia, Germany and the United States are getting strong and numerous in the Far East and Asian-Pacific. Rough hew it how one will, the leading mental question is, what is the meaning of the powerful naval concentration and successive huge ship construction in "all the future that will be?" The great powers, singly or collectively, must have some natural design and hostile intent. It is our duty to heave the lead in such a sea of suspicion, to fathom the depth of hostile diplomacy *per se*. European diplomacy is just as treacherous to England as ever it was. The nations are against us through envy of our wealth, and jealousy of our continuous prosperity. The Empire never was stronger in these days of foreign hatred, and British isolation. It has come out of the heavy and unique conduct of the Boer war with flying colours, with fresh honour, fame and name. Therefore we can afford to say, we fear no foe, and with regard to foreign diplomacy—"trust it not, it is fooling thee." In the midst of all the world's unrest and international threat, confiding and self-reliant England must not be too confiding in the European "Adamzads—the bears that walk like a man," Kipling's story of the Russian

"Adamzad" unfolds the true character of foreign nations in dealing with England. Naval and diplomatic experts conclude that during the next great war the Pacific Ocean will see large and far-reaching effects of naval battle. In some strategic respects the venue of battle will be changed from the Atlantic and West Indies to the Indian and Pacific Oceans. So vast and awfully important is the political situation in Europe that a touch of the cable button, or a Marconigram might set the seas in a warlike roar, once so familiar off "the Gib," the Azores, or "down the British Channel," with the voice of Blake and Drake shouting through the storm and wind blast. So large is our colonial trade and so numerous the possessions to protect on this side of the line that the first broadside of war will be felt by the Royal Navy and the Imperial Colonies and some drastic change in the defence and supreme command of the sea must take place. The Supreme Board of Admiralty in London must decentralise its power—delegate a large part of it from an overworked board to that of a sub-supreme board to deal with, and be responsible for naval war and results in the Southern Hemisphere. A war lord must be created to organise, prepare, and conduct naval warfare on this side of the line, with the admiral of the fleet's headquarters in Sydney. What—ho! Look at the map, study it, and its geographical position demands this radical naval change.

It may be said that the co-operation of the British fleets of the four stations mentioned by me will naturally move strategically together—all leaning to and supporting each other. That may be so, but the weak point is that the combined sea strategy will be directed from London, instead of from one great naval war lord from the central position of Sydney, with all red-cables to and from every part of the Southern Hemisphere. I produce the general idea. Let the naval expert propose the special idea, thresh the proposition out well, whilst I set it forth as food for naval reflection, reason and conclusion. The official and technical details should be grasped, to see if such a high and responsible naval command would work well or is practicable in the defence of one great and glorious empire—Colonial, Indian, and Imperial. Then the Imperial Board of Admiralty could depend upon a better and surer organisation, with strong colonial help in the shape of naval reserves, naval volunteers, and up-to-date ships for coastal defence. I am sure there is sound naval defence in such possible reform. The naval defence of India would be more effective and her seas swept of Alabamas and Cervera fleets in being—raiding, wrecking, bombarding and destroying. At any rate I should like to read in your pages some expert Indian opinion on the subject.

natural surface of the ground. Before however commencing to make artificial cover for his guns, an officer must consider whether he may not do more harm than good by so doing, as the erection of epaulements, or the making of gunpits, may only disclose his position. No hard-and-fast rules can be laid down: the question must be decided by the circumstances of the moment.

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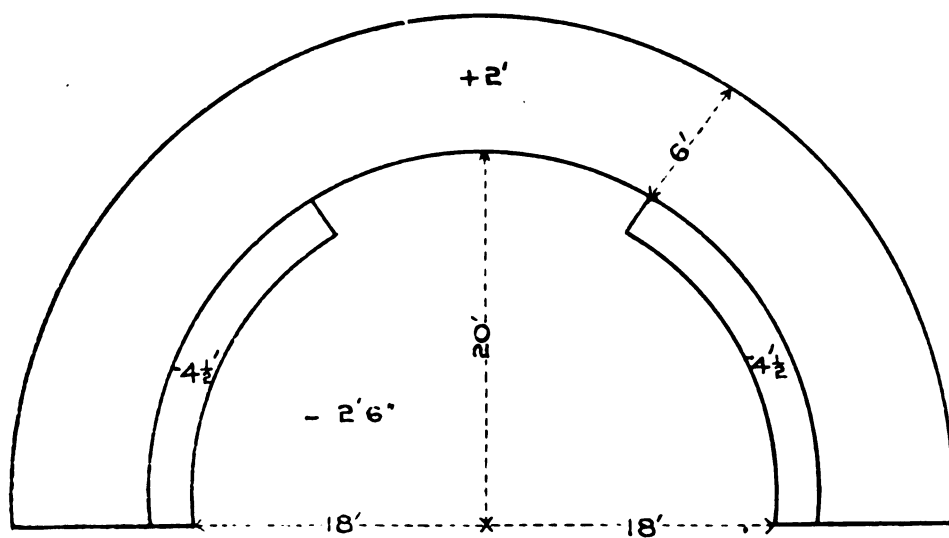
Off went a hundredweight of ammunition, the distance of the base of supply being over 6,000 miles.

ESCORTS.

The question of escorts for our artillery is a difficult one. Even Calwell, who has formed opinions on most questions, admits that this point requires solution. Infantry cannot keep up on the march if the guns are horse-drawn. Mounted troops are thrown away bargaining with the guns. For horse and field artillery the solution of the problem seems to be the addition of a certain number of men to the establishment, so that the battery can train and form its own escort.

The present system is not satisfactory. No commander of a cavalry or infantry unit can like having to detach part of his men as escort to a battery just when he is going into action, and it is always

Gun-pit used in South Africa .
for Medium Guns.



From May's "Retrospect on the S. African War."

possible that the party thus detached, may not know exactly what is wanted of them. If however the escort formed part of the battery and always drilled with it, the above difficulty would be removed, while the extra expense is more imaginary than real, for the escort must be formed from somewhere, and if taken from a cavalry or infantry unit, that unit is weakened.

There are one or two points still left that I should like to touch on. Officers of the other arms have often remarked that our artillery had much difficulty in locating the guns of the enemy: Well, Major Hamilton Gordon, who commanded the 61st Howitzer Field Battery in 14 days' fighting (14th to 27th February 1900) on the Tugela, says, that as far as could be judged the enemy only once knew where his battery was. I mention this to show how great is the difficulty in locating guns nowadays when they are properly handled, and it is owing to this difficulty rather than to our stupidity that the Boer guns were not located.

A short account of a garrison artillery company in the field printed in the Journal of the Royal United Service Institution shows how two 5" guns operated for five months with an active field force. During this period they marched 970 miles over all sorts of country accomplishing on some occasions for several days together an average of from fifteen to eighteen miles a day; on other occasions from twenty-two to twenty-five miles in a single day.

On the 27th June 1900 twenty-five shells were fired at a range of 5,000 yards; the enemy's fire was silenced and a pom-pom disabled.

On the 7th July near Bethlehem 200 rounds were fired, in some cases up to ranges of 9,000 yards. General Clements praised the company warmly for the service it had rendered in subduing the hostile artillery fire, and in supporting the infantry attack. One of the enemy's guns was disabled and subsequently captured.

On the 22nd July at a place called Slabbert's Nek, the Boers were entrenched in a very strong position with their artillery in the centre.

The 5" guns pushed on to 3,000 yards and maintained a vigorous bombardment. The shooting proved to have been excellent, as the enemy's gun epaulments were badly knocked about. One shell burst in an epaulment, damaged the gun and blew a French officer in charge to pieces.

When General Hunter moved out of Fauresburg on the 28th July these guns took part in the movement to envelop Prinsloo's commando. A Boer Long Tom seriously hindered our advance, the 5" guns were brought up and the fourth shell burst in Long Tom's emplacement, wounded every man in the detachment, and silenced the gun for the rest of the day. When Prinsloo's force surrendered, several of his officers wished to see the guns, the fire of which they said had

greatly hastened their surrender. One was overheard to remark with undisguised satisfaction—"Good-bye to the d——d lyddite guns."

As Lieutenant Seton who writes the above account truly remarks :—

"Performances such as these seem to demand that we should pay the greatest attention to this new development of artillery."

A NEW SCHEME OF NAVAL DEFENCE.

A GREAT NAVAL COMBINE.

BY GEO. C. CRAIG, AUTHOR OF "FEDERAL DEFENCE OF AUSTRALASIA," SYDNEY.

Since writing my last military paper on how Australia could help India the Defence Bill of Sir John Forrest has evidently been withdrawn, and what appears to be a makeshift organisation, to suit the Labour party now in the Federal Parliament, has been adopted. The conscript idea of Sir John Forrest has been given up, and the army of the Commonwealth has dwarfed itself down from over 920,000 men of all arms to a war footing of over 40,000 men. Taking the two schemes together, the one is just as unsatisfactory as the other. But no matter what some accommodating minds say, the fact remains that with an army of 920,000 or 40,000 men, in the event of war with Russia, Australia and New Zealand could, with our sea power intact, throw 10,000 mounted men into India, at the disposal of the Commander-in-Chief in India. When the Empire called, no power in the Colonies would dare to stop the men from volunteering, just as they did for South Africa. Sir Edward Hutton denies to me that he ever favoured such an idea. I take his denial with respect, but if he presumes to lean upon the blundering politicians of the Commonwealth, it is no misleading of public opinion here or in India, that India can rely upon Australian help.

The future true organised defence of Australasia must consist of three army corps, *i.e.*, the first to be composed of young men and the regular force, the second to be composed of the active militia and volunteers, and the third to consist of a general call to arms upon invasion. The details of this organisation I have given elsewhere. I care not what hostile critics rise up against my scheme, as when the present drought is over, all the contingents return home, and the young heroes get settled back into colonial life and character, such an offensive-defensive scheme of army organisation must be adopted. Indeed the General Officer Commanding himself is a firm believer in an offensive-defensive army. I hope he will not contradict this.

So much in sequence to military defence. But as the navy is the first line of defence a radical and complete change of naval direction, outfit, strategy, mobilisation, manning, and general preparation for sea warfare on this side of the line must take place, if a powerful blow must be delivered in the Far East, the Austral-Pacific, or the Indian Ocean. The time has come—if our colonies are "one all in all," to quote Mahan and Tennyson—when the disjointed and scattered fleets of the Indian, China, North Pacific and Australian stations must

act in combination, with the view to keep down raiding cruisers or fleets in being, or to deliver a powerful Nelsonic blow in Nile or Trafalgar fashion in any of these four seas. This is an age of reform in naval as well as in military organisation.

To combine the four fleets in the British naval defence of the Southern Hemisphere into one grand co-operative fleet, under an admiral of the fleet, with a responsible Colonial Board of Admiralty (under the Imperial Board in London) with the head-quarters in Sydney, I hope will not take the breath away from the several Commanders-in-Chief of each said station. The hostile aggression of large naval powers in Chinese and Pacific waters; the rise of such naval powers as Germany, Japan and the United States in the Pacific, together with the concentration of the warships and transport cruisers of Russia in Corean and Siberian parts leaves a nasty taste in the mouth. Mr. Shaw, a Minister of the United States, is still officially uncontradicted in his spread-eagle speech that the United States claim all the Pacific, even to the obliteration of the Union Jack, just as a Russian Prince once orated that Russia must have "all Asia." The context of such speeches are large orders—easier said than done. In one sense war has been secretly declared against the trade, commerce and expanding colonies of the Empire. The genius of a Tallyrand, a Bismarck, and a DeWitte has been at work for years. Bismarck began it with a sneaking regard for our trade and colonies. Russia's task has been to envelop India and destroy British trade and spheres of action in China. France has got Madagascar and enlarged her Indo-Chinese territory. She now wants New Hebrides. America throws up Cuba, whilst she bags islands in the West Indies, and holds firmly the Philippines, Guam, Pago-pago and other naval bases. Germany is in New Guinea. Samoa, and strongly fixed in the South Seas, within striking distance of many British possessions. The influence of the Panama Canal is a new feature to be dealt with. Japan is our ally, but its practical help to the British Empire has yet to be proved. The battleships, cruisers, and transports of France, Russia, Germany and the United States are getting strong and numerous in the Far East and Asian-Pacific. Rough hew it how one will, the leading mental question is, what is the meaning of the powerful naval concentration and successive huge ship construction in "all the future that will be?" The great powers, singly or collectively, must have some natural design and hostile intent. It is our duty to heave the lead in such a sea of suspicion, to fathom the depth of hostile diplomacy *per se*. European diplomacy is just as treacherous to England as ever it was. The nations are against us through envy of our wealth, and jealousy of our continuous prosperity. The Empire never was stronger in these days of foreign hatred, and British isolation. It has come out of the heavy and unique conduct of the Boer war with flying colours, with fresh honour, fame and name. Therefore we can afford to say, we fear no foe, and with regard to foreign diplomacy—"trust it not, it is fooling thee." In the midst of all the world's unrest and international threat, confiding and self-reliant England must not be too confiding in the European "Adamzads—the bears that walk like a man." Kipling's story of the Russian

"Adamzad" unfolds the true character of foreign nations in dealing with England. Naval and diplomatic experts conclude that during the next great war the Pacific Ocean will see large and far-reaching effects of naval battle. In some strategic respects the venue of battle will be changed from the Atlantic and West Indies to the Indian and Pacific Oceans. So vast and awfully important is the political situation in Europe that a touch of the cable button, or a Marconigram might set the seas in a warlike roar, once so familiar off "the Gib," the Azores, or "down the British Channel," with the voice of Blake and Drake shouting through the storm and wind blast. So large is our colonial trade and so numerous the possessions to protect on this side of the line that the first broadside of war will be felt by the Royal Navy and the Imperial Colonies and some drastic change in the defence and supreme command of the sea must take place. The Supreme Board of Admiralty in London must decentralise its power—delegate a large part of it from an overworked board to that of a sub-supreme board to deal with, and be responsible for naval war and results in the Southern Hemisphere. A war lord must be created to organise, prepare, and conduct naval warfare on this side of the line, with the admiral of the fleet's headquarters in Sydney. What—ho! Look at the map, study it, and its geographical position demands this radical naval change.

It may be said that the co-operation of the British fleets of the four stations mentioned by me will naturally move strategically together—all leaning to and supporting each other. That may be so, but the weak point is that the combined sea strategy will be directed from London, instead of from one great naval war lord from the central position of Sydney, with all red-cables to and from every part of the Southern Hemisphere. I produce the general idea. Let the naval expert propose the special idea, thresh the proposition out well, whilst I set it forth as food for naval reflection, reason and conclusion. The official and technical details should be grasped, to see if such a high and responsible naval command would work well or is practicable in the defence of one great and glorious empire—Colonial, Indian, and Imperial. Then the Imperial Board of Admiralty could depend upon a better and surer organisation, with strong colonial help in the shape of naval reserves, naval volunteers, and up-to-date ships for coastal defence. I am sure there is sound naval defence in such possible reform. The naval defence of India would be more effective and her seas swept of Alabamas and Cervera fleets in being—raiding, wrecking, bombarding and destroying. At any rate I should like to read in your pages some expert Indian opinion on the subject.

THE SUN FROM A MILITARY POINT OF VIEW.

BY MAJOR T. E. COMPTON, NORTHAMPTONSHIRE REGIMENT.

"The sun by day gives you the east in his rising and the west in his setting, and north and south at noon as you happen to be south or north, respectively of the equator. In Europe or India you are north of the equator and therefore at noon the sun is south of you."

The above paragraph is taken from Major-General Baden-Powell's otherwise admirable little book "Aids to Scouting" as an illustration of the mistakes which are constantly being made in military works in dealing with the most ordinary and patent facts of practical astronomy. It would be hard to contrive a clause which while having a plausible ring, contained more errors in so few words than the one I have quoted.

Corrected it would read thus:

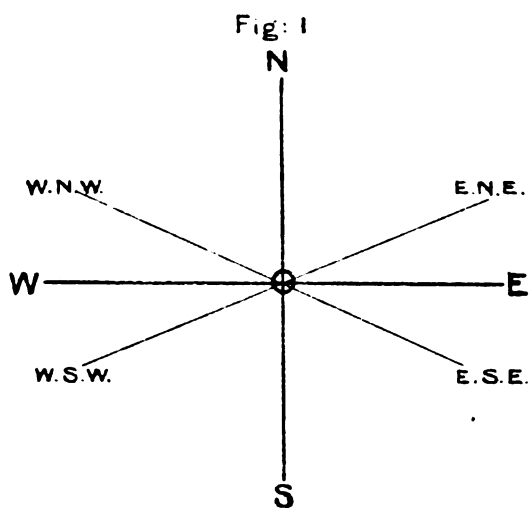
At the equinoxes, 21st March and 21st September, the sun by day gives you approximately the east in his rising and the west in his setting.

At the solstices, 21st June and 21st December, the sun bears approximately rising and setting ENE and WNW and ESE and WSW 'respectively' in India, Africa and the greater part of Australia: but in Europe, especially in the higher latitudes such as England, at the solstices the sun's bearing at his rising and setting would be found to differ from east and west as much as 40° to 50° . It is only therefore near the equinoxes that the sun will give you east and west at his rising and setting respectively; and it is necessary to get into your head the approximate position of the sun for every month of the year to make use of it at other times in this way.

Again the sun at noon will give you north and south as you happen to be south or north of the equator, respectively, *if your latitude is more than $23\frac{1}{2}^\circ$* . If your latitude is less than $23\frac{1}{2}^\circ$ the sun will sometimes give you north and sometimes give you south and twice every year will give you no result at all, for it will be directly over your head.

To illustrate this last statement: Bangalore is about 13° N. Latitude. The sun passes north of this place towards the end of April and remains north until the middle of August. Therefore here in the Northern Hemisphere for $3\frac{1}{2}$ months the sun gives you the north and not the south.

Again at Colombo, 8° N. Latitude, the sun passes north about the 15th April and does not return south until the 1st September or $4\frac{1}{2}$ months.



The Thick line W. E. represents the bearing of the sun at the Equinox rising and setting.

The Thin lines represent the approximate bearings of the sun at the Solstice.

Consequently within the tropics it is clearly necessary to know the approximate position of the sun in each month of the year in order to learn from it at noon the direction of the north or of the south.

It should be remembered that when the sun is south the shadow of a stick at noon is north and *vice versa*.

The approximate position of the sun at his rising and setting in India is best explained by a diagram, Fig 1. The bearings vary slightly with the latitude; and the position of the observer whether on high ground or in a valley will make a difference.

Let O be the position of the observer.

Through O draw two lines at right angles representing north and south and east and west.

Again through O draw two more lines at an angle of 24° from the east and west line.

From O these lines will evidently bear about ENE or WSW and ESE or WNW. These bearings which represent the bearings of the sun at the solstices vary slightly with the latitude, *e.g.*, in Latitude 31° N. on the 21st June the sun rising bears about $62\frac{1}{2}^{\circ}$ and in Latitude 14° N. it bears about 66° . The 21st June is the summer solstice in the Northern Hemisphere and the winter solstice in the Southern Hemisphere and on this date the sun bears roughly ENE rising and WNW setting in both hemispheres within the limit on each side of the equator of Latitude 34° .

The 21st December is the winter solstice in the Northern Hemisphere and the summer solstice in the Southern Hemisphere and on this date the sun bears roughly ESE rising and WSW setting within the same limit. On the 21st March and 21st September only will the sun rise east and set west except at the equator.

How then is it possible to set a map by the sun or to determine the direction of the meridian by the hands of a watch?

Except at the equinoxes it must be admitted this is not a simple question. But as these problems have been included in military examinations for promotion it may be of interest to examine them and to see what practical results can fairly be obtained.

Two factors, *viz.*, *local time* and *the equation of time*, seem to have frequently escaped the notice of military writers on this subject. Yet they may exercise a considerable influence on the accuracy of results even at an equinox.

Take, for instance, Bangalore, which is a fair average example: Longitude $77\frac{1}{2}^{\circ}$.

The official time at Bangalore, to which all clocks and watches are set, is Madras mean time and this is, I believe, the case in every station in India except Bombay. Bangalore is about $2\frac{1}{4}^{\circ}$ of longitude west of Madras and consequently apparent time there is 10 minutes behind Madras apparent time. But if any one were curious enough to look at the sundial in front of the District Office at 1 o'clock during the month of February and compare it with the clock in the tower of St. Andrew's Church close by, he would find the sundial indicating not

about 12-50 P. M. as possibly he might expect, but about 12-36 P. M. ; that is to say the sundial would be found to be not 10 minutes, but 24 minutes slow.

The reason for this is that the clock shows the Madras mean time and the sundial the local apparent time (the true time). In order to correct the clock time to true time for most of the dates in this month 24 minutes would have to be deducted : 10 minutes for longitude and 14 minutes for the equation of time. Now 24 minutes is an appreciable period during which the sun about meridian would travel an appreciable distance in bearing—say on an average 8° —and to use the sun's shadow as a rough meridian line at 12 o'clock with any approach to accuracy your watch must show the local apparent time.

Again if it were desired to set a map with a watch the rule is to point the hour-hand at the sun and to bisect the distance between the hour-hand and XII on the dial for the meridian.

This rule is based on the fact that the hour-hand of the watch goes round the dial twice for every revolution of the sun. Consequently the hour-hand, as it were, is travelling twice as fast as the sun. The sun describes half a circle while the hour-hand goes right round. Point it therefore at the sun, and then XII on the dial will indicate twice the distance between the sun and the meridian, because the hour-hand moves twice as fast. Bisect this distance and theoretically at an equinox the result is the meridian.

But it is evident that the accuracy of the method depends in some measure on the watch being set to correspond with the movements of the sun : that is to say to local apparent time. The first rule therefore in dealing with these problems should be—

Rule I.—Set your watch to local apparent time. This having been done at 12 noon whether at an equinox or at any other time, the sun's shadow will give you the meridian: and at an equinox when the sun is near the horizon, the watch method should prove satisfactory. For although you can seldom be absolutely certain of your time within a minute or so, the results will still be quite accurate enough for what is required.

We may therefore lay down the second, third and fourth rules.

Rule II.—Out of the tropics and within the tropics for half the year the shadow of a stick at noon points to the north or south as the observer may be north or south of the equator. Within the tropics from 21st March to 21st September in the Northern Hemisphere and for the other half of the year in the Southern Hemisphere the shadow of a stick at noon points to north or south as the sun may be south or north of the observer, *i.e.*, as the sun's declination is less or greater than the latitude.

Rule III.—On the 21st March and 21st September the sun at his rising and setting bears east and west respectively.

Rule IV.—On the 21st March or on the 21st September the bisection of the distance between the hour-hand (of a watch) pointed at the sun at his rising or setting and XII on the dial will give you the meridian.

Again at a solstice on the 21st December or on the 21st June the sun at his rising and setting bears in India some angle from 20° to 30° to the south or north of the east and west line. Roughly for military purposes it may be said, to bear two points of the compass from that line on those dates. This therefore we may make our fifth rule.

Rule V.—On and about the 21st June at his rising and setting the sun bears two points of the compass northwards of the east and west line and on about the 21st December two points of the compass to the south.

This rule applies to both hemispheres within the limit of latitude 34° from the equator.

But it is obvious that rules 3 and 5 only provide for a few days in the year and that there are still large gaps to be bridged. If the sun moved evenly in the declination this would be comparatively an easy matter ; but unfortunately the sun does not move regularly. The subjoined table, however, gives approximately the sun's bearing rising and setting on the 1st of each calendar month within the limits of the equator and 34° North latitude and from this table a proportional bearing can be estimated for any given date.

—			34 to 25	24 to 13	12 to 1
January 1st	...	...	118 to 242	116 and 244	113 and 247
February 1st	...	...	112 and 249	110 „ 250	107 „ 253
March 1st	...	...	100 „ 260	98 „ 262	97 „ 263
March 21st	...	...	90 „ 270	90 „ 270	90 „ 270
April 1st	...	...	84 „ 276	85 „ 275	84 „ 276
May 1st	...	...	73 „ 287	75 „ 285	75½ „ 274½
June 1st	...	...	64 „ 296	66 „ 294	67 „ 293
June 21st	...	...	62½ „ 297½	65½ „ 294½	66 „ 294
July 1st	...	...	63 „ 297	66 „ 294	67 „ 293
August 1st	...	...	68 „ 292	71 „ 289	72 „ 288
September 1st	...	...	80 „ 280	81 „ 279	82 „ 278
September 21st	...	...	90 „ 270	90 „ 279	90 „ 270
October 1st	...	...	94 „ 266	93 „ 267	93 „ 267
November 1st	...	...	109 „ 251	107 „ 250	104 „ 256
December 1st	...	...	116 „ 244	114 „ 246	111 „ 249
December 21st	...	...	118 „ 242	116 „ 244	113 „ 247

With this table therefore before us our next rule will be as under.

Rule VI.—To find the sun's approximate bearing rising and setting on any day of the year in the Northern Hemisphere between the equator and the 34° parallel of latitude.—*Observe the bearings entered on each side of the given date under the latitude and take the proportion for the required bearing.*

Example.

January 24th	...	Latitude	20°
From the Table			
January 1st	...	116°	244°
February 1st	...	110°	250°
			<hr/>
	Difference	...	6°
			<hr/>

$$\frac{3}{8} \text{ of } 6 = 4 \frac{1}{2}$$

and therefore the bearing of the sun rising and setting on the 24th January will be $111^{\circ} 12'$ and $246^{\circ} 48'$ respectively.

This example taken at hazard works out correct to 38 minutes of a degree.

I do not say that every other example would work out as correctly as this one. I have not the time at my disposal at present unfortunately to compare them all; but when my handbook appears, as I hope it will do shortly on "Marching by the Stars," this table, which will be included in it, shall be as correct as it can be made.

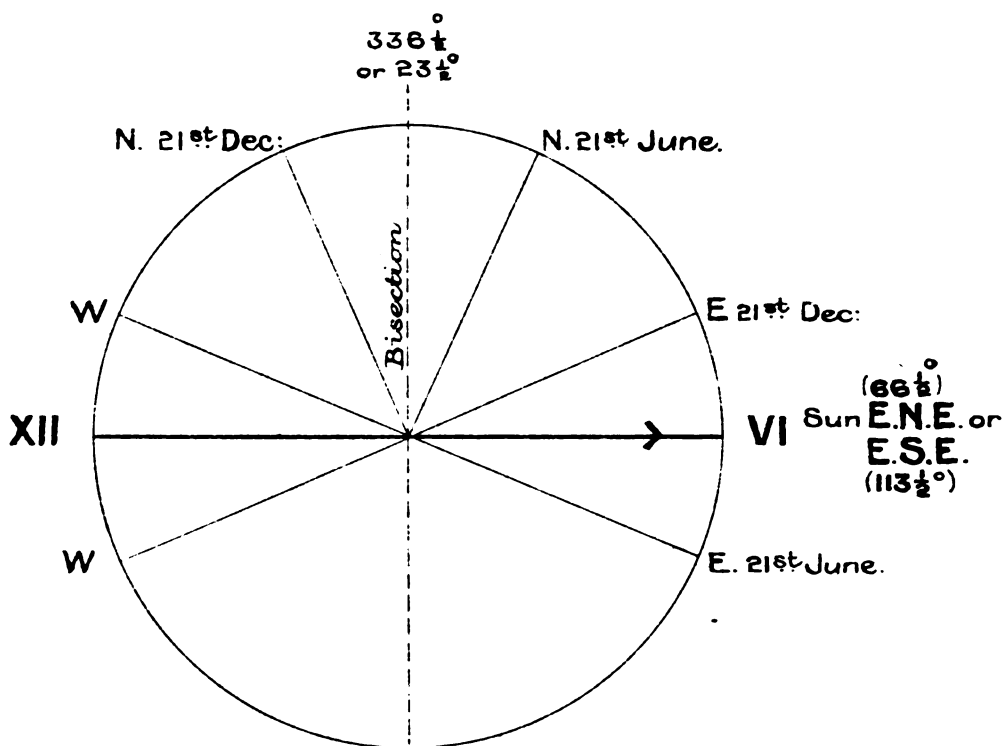
In my handbook will also be found a table giving the means of the equation of time; and with these two tables and a knowledge of the longitude of the place which can always be found in degrees from any map or in time from any post or telegraph office all the foregoing rules can be applied.

We will now return to the watch problem. This method can only be relied on at the equinoxes when the sun is near the horizon as stated in rule 4. The sun is a star, which owing to the movement of the earth in its orbit, varies in declination daily. It thus passes within the tropics into all three categories into which I divide the stars (see Volume XXX, No. 145, United Service Institute of India Journal, October 1901), and out of the tropics is for half the year a star of the second category and for the other half a star of the third category.

In order for the watch method to give accurate results at all times the sun should move regularly in bearing as the hands of a watch move regularly round the dial.

This, however, is not the case.

Fig II.



It is possible, however, to get some fair results at the solstices. The method is workable then in high latitudes down to Latitude 30° . Below 30° the initial error increases rapidly with the latitude.

At the equator, for example (where the sun always rises and sets six hours from meridian), at the solstices the sun is $23\frac{1}{2}^\circ$ from the east and west line rising and setting. Consequently here as the sun rises at 6 hours if you were to point the hour-hand at the sun rising it would register on the dial 6 o'clock, which corresponds to 90° : because 180° on the watch = 90° of the sun, the hour-hand making two revolutions while the sun is making one. But the bearing of the sun on the 21st June at the equator is $66\frac{1}{2}^\circ$. If therefore you were to bisect a half circle of the sky beginning at $66\frac{1}{2}^\circ$ it would end at $246\frac{1}{2}^\circ$ and the bisection would point to $336\frac{1}{2}^\circ$ instead of to 360° or North. Similarly on the 21st December the sun bears at the equator $113\frac{1}{2}^\circ$ rising and the bisection would read $23\frac{1}{2}^\circ$ instead of 360° (see Fig. II).

In latitude 20° on the 21st June in the Northern Hemisphere the sun rises about 5-30 A.M. which corresponds to 75° . But the sun's bearing in this latitude rising on this date is $65\frac{1}{2}^\circ$ (see Table, Rule 6), an error of $9\frac{1}{2}$ degrees.

We may therefore now formulate our seventh rule, *vis.* :—

Rule VII.—Point the hour-hand of a watch at the sun rising or setting in the Northern Hemisphere on or about the 21st June or the 21st December and add the following corrections according to the latitude to the bisection of VI and XII on the dial, away from XII in the summer and towards XII in the winter, and the result will give the North approximately (see Fig. II) and if a similar diagram for the evening be constructed it will be found to support this rule.

Corrections.

At the Equator	...	$23\frac{1}{2}^\circ$	or 4 minutes	on the dial.
Lat. 1° to 9°	...	20°	or 3	„ „
„ 10° to 14°	...	15°	or $2\frac{1}{2}$	„ „
„ 15° to 20°	...	10°	or 2	„ „

But the above rule only applies at or near the solstices to observations made when the sun is near the horizon. When the sun gets up in the sky for the reasons I have already given the corrections that would be required are altogether too complicated and intricate to have any practical value. An observation under these circumstances would be quite uncertain in its results; it might come off or it might not, most likely not, by this method.

But in the handbook, which I hope to publish, the bearings of the sun on any given day for any hour of the day can always be found approximately by looking up a star with a declination similar to that of the sun for that day. All the data of the star will then apply to the sun with sufficient accuracy probably for military purposes.

We have, however, not quite done with the watch problem yet. Rule VII gives the corrections that should be applied at *or near* a solstice for observations in the morning and evening. This period may be taken as a month, *i.e.*, a fortnight on each side of the solstice: one week may also be taken at each equinox during which no correction whatever is required.

Two months and-a-half of the year are thus provided for, for observations at sunrise and sunset.

For the remaining $9\frac{1}{2}$ months the following rule will be found sufficiently correct as will be seen from the examples which follow it. It will be convenient moreover to so word this rule that it shall include rule IV. Rules I, VII and VIII will then include every question connected with the watch problem which is of practical value.

Rule VIII.—At or near sunrise and sunset in the Northern Hemisphere point the hour-hand of a watch at the sun on any day of the year. If within a few days of an equinox bisect the distance between it and XII on the dial and the result will be approximately the meridian. If within 15 days of a solstice apply rule VII with the corrections; and on the other dates, not before referred to in this rule, apply rule VII with the corrections decreased proportionally according to the date.

EXAMPLE I.

January 24th, Lat. 20° .

By rule VII at the solstice (21st December) the correction required is 10° towards XII, therefore on the 24th January, say one month from the solstice and two months from the equinox, the correction should be two-thirds of $10^{\circ} = 6\frac{2}{3}$. Say one minute on the dial.

To prove this:

On the 24th January in 20° N. Lat. the sun rises at 6-30 A.M. = 105° on the dial. The hour-hand indicating 105° points to the sun. But from Table—Rule VI the bearing of the sun rising on this date is 111° . $111^{\circ} - 105^{\circ} = 6^{\circ}$ which is the correction to be applied.

As the hour-hand points to 6-30 on the dial and to the sun and as 30 minutes * on the dial with reference to the hour-hand = 15° it follows that VI on the dial points to $(111^{\circ} - 15^{\circ}) = 96^{\circ}$.

Therefore the semi-circle of the sky from VI to XII on the dial is from 96° to 274° and the bisection of this semicircle is 6° . Add 6° towards XII and the result is 0° or $360^{\circ} =$ North.

EXAMPLE II.

August 5th, Lat. 9° .

August 5th is $1\frac{1}{2}$ months from the solstice or midway between the solstice and the equinox.

* *Note.*—The hour-hand moves 30° on the dial in one hour and therefore 15° in half an hour, 5° in ten minutes and 20° in 40 minutes.

By rules VII and VIII $\frac{2}{3}^\circ = 10^\circ$ or say 2 minutes on the dial is the correction to be applied. To prove this :

From Table, Rule VI, the bearing of the sun rising on this date is 74° . The sun rises at 5-50 A. M.

5-50 on the dial $= 85^\circ$.

$85^\circ - 74^\circ = 11^\circ$ say 2 minutes on the dial which is the correction to be applied.

Now the hour-hand in this case points to 5-50 on the dial and to the sun ; and as 10 minutes on the dial with reference to the hour-hand 5° and as the sun's bearing is 74° , it follows that VI on the dial points to $(74^\circ + 5^\circ) = 79^\circ$.

Therefore the semi-circle of the sky from VI to XII on the dial is from 79° to 259° and the bisection of this semi-circle is 349° . Add 11° away from XII and the result is 360° or $0^\circ =$ North.

In Latitude 30° and upwards no corrections need be applied for example.

5th August, Lat. 30° .

Sun rises at 5-20 A.M. $= 70^\circ$ on the dial. From Table, Rule VII, the bearing of the sun rising on this date is 70° .

Difference *nil*.

To prove this :

On the 5th August in Lat. 30° N. the hour-hand points to 5-20 on the dial and to the sun and as 40 minutes on the dial with reference to the hour-hand $= 20^\circ$, it follows that VI on the dial points to $(70^\circ + 20^\circ) = 90^\circ$.

Therefore the semi-circle of the sky from VI to XII is from 90° to 270° and the bisection of this semicircle is 0° or $360^\circ =$ North.

On a previous page I have said that in the handbook which I hope to publish, the bearings of the sun on any given day for any hour of the day can always be found approximately by looking up a star with a declination similar to that of the sun for that day. Quite recently at Bangalore and since this paper was written this method has been tested ; and the results may I think be described as entirely satisfactory.

From the end of April to the middle of August the sun is at Bangalore, as already stated, a northern star with declination greater than the latitude. It is therefore a star of the first category* and presents during that period all the advantages, as a comparatively stationary object, which a star of this category offers to the observer.

* NOTE.—See "Marching by the Stars."

Journal of the United Service Institution of India, October 1901.

From the 16th May to the 28th July for three or four hours after rising and for the same time before setting the sun's bearing only varies about 8° ; and on any one day only about 4° . Its bearing on rising, or rather I should say at six hours from meridian, during this period varies from about 68° to 72° and its greatest bearing, when on its tangent, varies from about 72° to 76° . Similarly in the afternoon its tangent bearing varies from about 284° to 288° ; and when low on the horizon from about 288° to 292° .

To apply the watch problem to these conditions: point VI on the dial at the sun when within four hours of the horizon, bisect the distance between VI and XII and add a correction *away* from XII and the result is the true north.*

This correction varies according to the approximate position of the sun with reference to the east and west. The greatest variation is about $22^{\circ} = 3\frac{1}{2}$ minutes on the dial and the least variation is about $14^{\circ} = 2\frac{1}{2}$ minutes on the dial. It has been found that 3' early in the morning and late in the evening and $2\frac{1}{2}'$ at other hours have been good working corrections. The results tested by compasses† were invariably approximate (as obviously they should be); and on one occasion (28th July, about 9 A.M., correction $2\frac{1}{2}'$) absolutely correct. For on this day at this time it happened that the sun was in its tangent hour bearing 75° to 76° .

The easiest way of setting a map by this method was found to be thus: fix the map on a plane table, stick a pin in the board and lay the watch on the map with VI on the dial against the pin and so arranged that the line through the centre of the dial and the required correction from the bisection of VI and XII points to the true north on the map. Then revolve the board until the VI and XII on the dial are in the shadow of the pin and the map is set.

It will of course be understood that this particular plan is only applicable to the tropics and then only for a certain period varying with the latitude.

But in whatever latitude the observer may be, if the sun's movements are known a more or less similar modification of the watch problem suitable to the conditions should be easily evolved.

* NOTE.—There should be no doubt on which side of the dial the north lies; because the sun is to the eastward in the morning and to the westward in the afternoon.

† NOTE.—There is practically no variation of the compass at Bangalore at the present time. What there is is west but many compasses read *nil*.

CARRIAGE OF 2.5" GUNS IN BALUCHISTAN ON RIDING CAMELS.

BY LIEUTENANT E. F. ORTON, 7TH BOMBAY LANCERS.

The following scheme is suggested for the transport of two mountain battery guns with the escort of the Political Agent at either Kalat or Chagai (Nushki), in the winter tours which are now practically an annual feature in our political administration of Baluchistan; bearing in mind the peculiar features of the country, and also the peculiar political situation.

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The usual escort of the Political Agent, Kalat, is 200 rifles, 2 mountain guns, and a personal cavalry escort of about 25 sabres, all native troops. The Baluch sirdars are all more or less independent, and concerted action among them, involving having to deal with a numerous and well armed enemy, is not to be expected in the usual course of affairs. But it is not an uncommon thing for a sirdar, with a following of 100 to 500 men, to consider his grievances entitle him to turn "yagi," and to defy the Political Agent. Prompt action in such a case is all-important, and hence a strong escort with these tours.

Strong mud forts are dotted about all over the country, and the necessity for small guns with the escort is merely to deal with any sirdar who shuts himself up in his fort, and makes this his base for raids in revenge for his grievances. In such a case the fort can be surrounded, and the guns brought up at leisure, to effect a breach, or anyhow destroy the battlements of the towers sufficiently to allow the infantry to assault. The only advantage of using battery mules in this country is that the guns can be brought into action within a minute. Whereas it may be said that this is never required. The moral effect of having guns with the escort makes it absolutely neces-

sary to carry them, and the question is how they should be carried in the most mobile manner; at the same time keeping expenses down to a minimum, as the cost of transport is the chief bar to more extended and therefore more successful tours. The following points should be carefully kept in mind when comparing riding camels *versus* mules for carrying two small guns in the Nushki, Sarawan, Jhalawan, Makran, and Kharan districts:—

1. The average march from water to water is about 16 miles. Marches of 23 or 24 miles are not uncommon, and the failure of water springs at some camping-ground may easily involve a double march of over 30 miles.

2. Water is often very scarce, and the fewer men and animals, the more routes open to choice.

3. Supplies both for men and animals are very scarce. The population is very sparse, and the people live a nomadic life. There are few places where supplies for 200 men for even one day can be obtained. Escorts usually carry three or four months' supplies for men and grain for animals. The number of camels carrying supplies alone starting from Tump in Makran in January 1902 was over 700.

4. Camel grazing is possible everywhere, and is nearly always excellent. Whereas bhoosa and good grass are so scarce that horses and mules soon lose their condition with continuous marching. Besides camel grazing costs nothing, and bhoosa and grass involve much trouble to collect and carry to camp, and then must be paid for.

5. Casualties can always be immediately and cheaply replaced by locally purchased riding camels, and these would require no training. Whereas mules of the stamp required for a mountain battery are impossible to get. The riding camels carrying guns or kit in the proposed scheme are interchangeable, and loads could always be rearranged to meet an emergency of casualties to an extent of over 50 per cent.

6. A great saving in the perimeter of a camp is effected by using camels.

7. Over the stony or sandy barren valleys of Baluchistan a riding camel corps would do a 30-mile march in 6 or 7 hours, and the men would arrive in camp comparatively fresh. Whereas a mule battery over the same ground would take at least 12 hours, as they have to halt more, to rest both men and mules, and to change loads; and the men and animals arrive in camp so done up that a halt the next day becomes necessary.

8. A camel corps as suggested forms its own escort, as each man has a carbine on his camel in a bucket. An infantry escort to the guns must be detailed when mules are used.

9. It should be borne in mind that the escort is often 400 miles or more from its base.

The following tables show roughly the establishment of a section of a mountain battery with mules, and the establishment of camels, etc., proposed to carry two similar guns.

Section with mules.

British officer	...	...	1
Native officer	...	...	1
Gunners	...	...	29
Gunners non-commissioned officers	...	...	4
Drivers	...	...	50
Driver non-commissioned officers	...	...	3
Trumpeter	...	...	1
Nalbund	...	...	1
Salutri	...	...	1

Followers.

Officer's servant	...	...	1
Officer's syce	...	...	1
Bhisti	...	...	1
Langris (cooks)	...	...	2
Blacksmith	...	...	1
Carpenter	...	...	1
Mochi	...	...	1
Native officer's syce	...	...	1
<hr/>			
Total	100 men.
<hr/>			

Ordnance mules	46
*Baggage mules (1st class)	42
Ponies	3
<hr/>			
Total	91 animals.
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Baggage Camels.

British officer's kit	220 lbs.
99 men's kit @ 26 lbs.	2,574 „
20 days' men's rations	4,000 „
20 days' animals' grain	10,040 „
Extra necessary water puckal	400 „
<hr/>			
= 43 camels... 17,234 „			
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In calculating the baggage camels 20 days' rations are allowed for, to enable a comparison to be made with the camel corps, which is arranged to carry always 20 days' rations on baggage camels and 3 days or more on riding camels with the guns.

* These 42 mules carry tents, line-gear, small arms ammunition, cooking pots, overcoats, one water puckal, tarpaulins, etc. The long marches and loss of condition make sore backs almost unavoidable and extra baggage camels usually have to be told off to carry portions even of this kit.

390 CARRIAGE OF 2.5" GUNS IN BALUCHISTAN ON RIDING CAMELS.

Riding camels.	CAMEL CORPS.		Weight of gear.	Weight of man with kit.	Weight of saddle.	Total weight.
	Load for each camel.	Man on each.				
No. 3	Carriage, etc.	1 gunner ...	1ba. 230	1ba. 215	1ba. 100	1ba. 535
2 {	Pair wheels	1 gunner ...	300	215	100	515
	Elevating gear, etc. ...					
2 {	Breech	1 non-commissioned officer.	230	215	100	535
	Shifting bar					
2 {	Breech bearer, etc. ...	1 gunner ...	230	215	100	535
	Chase					
	Chase cap					
	Chase bearer					
2 {	Rammer, etc.	1 gunner ...	230	215	100	535
	Axle					
	Aiming posts					
	Case shot box					
	Small store box					
2 {	Trunnion guard, etc. ...	1 gunner ...	230	215	100	535
	Spare wheel					
	Spare axle					
1 {	Spare elevating gear, etc. ...	1 gunner ...	200	215	100	515
	Each 2 boxes of ammunition... ..					
8 {	Also pick shovel	1 gunner ...	260	215	60	535
	4 days' rations for men ...					
1 {	1 tent, 160 lbs.	1 langri ...	250	180	80	510
	1 tent, 40 lbs.					
	Cooking pots					
1	Water packal	1 bhisti ...	220	180	80	480
1	British officer and his bedding	1 gunner orderly...	230	215	80	495
1 {	Officer's tent and kit ...	1 officer's servant	230	215	80	515
	1 tent, 40 lbs. for followers ...					
3	Spare camels	1 Baluch camelman	...	180	100	280

37 Riding camels carrying—

- 1 British officer.
- 2 Non-commissioned officers.
- 19 Gunners.
- 3 Followers.
- 3 Camelmen.

23 men

Baggage camels.

16 days' rations for men ...	1ba. 896
20 days' grain for riding camels ...	7,560
	<u>8,456</u>

— 21 camels.

Each gunner would carry—

1 Lee-Metford carbine in bucket ... ..	...	...	...	9
1 Canvas water chagal ... ..	...	...	...	3
3 Days' rations in haversack ... ..	...	...	...	6
1 Poshteen ... ..	...	...	...	4
1 Blankets, 1 rezal ... ..	...	...	...	15
1 Water-proof sheet, 1 dharri ... ..	...	...	...
Grain for camel ... ..	...	...	...	10

47 lbs. on saddle.

His clothing consisting of khaki serge coat, breeches of stout cord, putties, ankle-boots, khaki pagri, bandolier with 100 rounds, underclothing as usual including a jersey, weight, including

man 165 lbs.

215 lbs.

It is not proposed to keep up a special establishment for these two guns. In the Quetta Arsenal, or in charge Commanding Royal Artillery, Quetta, the following articles might be stored:—

2 mountain guns and their fittings.

27 special camel saddles.

22 Lee-Metford carbines.

Special clothing such as riding breeches, etc.

Water puckal and chagals, etc.

The Political Officer requiring the guns to accompany him on tour would easily arrange for 27 first class riding camels. Selected camels could be bought through the political authorities for about Rs. 180 each; total Rs. 4,860.

It would then only be necessary to indent on one of the native mountain batteries for the personnel required, who would bring with them only such articles of their ordinary kit as might be settled in working out details of the scheme. Officers commanding native mountain batteries would probably welcome a plan which would only involve the withdrawal of 21 of their men, instead of one-third of their battery, during the whole of the drill season. The British officer in command would take his party to Quetta, take over guns, stores and camels, and be ready to start in about two days' time. It would not be necessary to teach any special drill, recognizing the fact that it would never be necessary to hurry into action.

The ideal political escort in Baluchistan and its borders would be—

2 mountain guns on 27 riding camels;

150 native infantry on 75 riding camels, carrying their own light baggage.

Their supplies with an infantry escort of 50 rifles could follow by easy stages, catching up the Political Officer during halts, and while country one or two days' marches to right or left was being visited by the flying column, sick men would be sent to the supply column.

An escort like this would cover more ground in two months than an ordinary escort could do in four months, and the valuable time would be saved of all concerned; to say nothing of its economy in the long run.

It is estimated that on a one month's tour a saving on the following items would be made by using riding camels:—

	Rs.
On issue of free field service kits to 70 fighting men, one follower	2,132
Field service rations of 70 fighting men and one follower	426
On fodder issued to animals allowing a camel 30 lbs. per day and cost four annas per maund ...	75
On grain allowing a camel 14 lbs. per day, and price crushed grain Rs. 2 per maund ...	77
Difference between hire of 21 and 43 baggage camels at Rs. 15 per month	330
Hire of camels to carry difference of 10 more days' supply (20 days carried above)	105
Difference between cost of return special troop train Hasan Abdal-Quetta (as guns are always detailed from Abbottabad) and return Railway Warrant for one officer 23 men Hasan Abdal-Quetta	10,000

There would besides be saving on wear and tear of expensive kit of one-third mountain battery as against wear and tear of smaller amount of kit with camels.

Deterioration of value of 27 riding camels (which would be sold again at the end of the tour) would be less than the deterioration of 88 high priced mules.

The pay of three good Baluchi camel sarwans would not be more than Rs. 45 per month.

The initial cost of the special kit required for the camel corps would probably be more than covered by the saving effected on one single tour and would be mostly non-recurring.

It is said against a camel corps in Baluchistan that the animals do not keep fit, and casualties are very great. I have used riding camels in many parts of Baluchistan over long distances, and apparently the secret of keeping them fit is to have camelmen of the country in charge of the animals, and to give the camels about 12 pounds of suitable grain per day.

NOTE.

I have perused the above letter regarding the carriage of mountain battery guns on riding camels and I am of opinion that the scheme is both practicable and likely to prove of great use if adopted. Whenever it is necessary to send an escort of troops with a Political Officer in Western Baluchistan (Jhalawan, Mekran, Kharan, etc.) it must speaking generally, be necessary to send guns also. For such escorts are intended not for defensive purposes only. They may frequently have to take active steps for the punishment of disobedient Chiefs and others and as the whole country is full of petty forts, a purely cavalry or infantry escort might find itself confronted with a task which, if feasible at all, could probably only be accomplished at considerable cost. On the other hand the very presence of guns would, in most cases, have the effect of entirely preventing any attempt at open resistance; and one or more carried in the simple mobile way described by Lieutenant Orton would add greatly to the usefulness of the escort and probably also to the political results obtained during the tour. Guns with their ordinary establishment of mules, drivers, fighting-men, etc., are not required, while the difficulty attending the rationing of such a party and the comparatively slow rate at which they travel might often render it necessary to despatch an escort unattended by artillery notwithstanding the inconvenience that might in consequence be entailed.

MEKRAN; }
12th January 1902. }

H. L. SHOWERS, *Lieut.-Col.*,
Political Agent, Kalat.

SOME FOREIGN ARTICLES OF SPECIAL INTEREST.

BY CAPTAIN J. M. HOME, 2-2ND GURKHAS.

VOİENNYI SBORNIK.

MAY 1902.

The general staff, its foundation and development.

Purely a historical resumé, comes to the conclusion that the only people who had any organisation for war in the modern acceptation of the word up to the end of the middle ages were the Tartar Mogul invaders of Europe. As time went on, in Germany, and in France under Louis XIV, some attempt was made to have some sort of permanent officials, and though nothing was really done, a step was made in the right direction by recognising the necessity of having joint organization. However, the real founder of a staff, as understood in the present day, was Gustavus Adolphus and it was owing to his having an organised army that his successes in the 30 year war were due. The Swedish army was run by a military college consisting of a president called the State marshal, two State counsellors, four military assessors and several secretaries, which is apparently the first example in modern times of any sort of general staff.

The German Infantry, its education and instruction.

The author draws the conclusion that the keynote of instruction is the development of individual intelligence, and careful study of details. Parade movements are most carefully taught as an aid to discipline; there is no standard form of attack, each unit commander inventing his own according to circumstances. Several examples of formations for attack of the company, and battalion are given, also the method of carrying out an inspection of a company. The author does not treat of larger bodies than a battalion.

The training of the cavalry soldier.

The author lays the greatest stress on the development of the individual's intelligence; cannot condemn the manege and barrack square too strongly; these should be only resorted to when weather is too bad to go out into the open country. War takes place in the open country, across all sorts of obstacles, therefore in training the soldier for war he ought to be practised across country; it accustoms rider and mount to work independently and makes the horse clever, if all instruction takes place on level open ground in war-time the soldier instead of looking out for the enemy is fully engaged in looking after his horse. Hence every day spent in the riding school or on the square is a day lost.

From the 16th May to the 28th July for three or four hours after rising and for the same time before setting the sun's bearing only varies about 8° ; and on any one day only about 4° . Its bearing on rising, or rather I should say at six hours from meridian, during this period varies from about 68° to 72° and its greatest bearing, when on its tangent, varies from about 72° to 76° . Similarly in the afternoon its tangent bearing varies from about 284° to 288° ; and when low on the horizon from about 288° to 292° .

To apply the watch problem to these conditions: point VI on the dial at the sun when within four hours of the horizon, bisect the distance between VI and XII and add a correction *away* from XII and the result is the true north.*

This correction varies according to the approximate position of the sun with reference to the east and west. The greatest variation is about $22^{\circ} = 3\frac{1}{2}$ minutes on the dial and the least variation is about $14^{\circ} = 2\frac{1}{2}$ minutes on the dial. It has been found that 3' early in the morning and late in the evening and $2\frac{1}{2}'$ at other hours have been good working corrections. The results tested by compasses† were invariably approximate (as obviously they should be); and on one occasion (28th July, about 9 A.M., correction $2\frac{1}{2}'$) absolutely correct. For on this day at this time it happened that the sun was in its tangent hour bearing 75° to 76° .

The easiest way of setting a map by this method was found to be thus: fix the map on a plane table, stick a pin in the board and lay the watch on the map with VI on the dial against the pin and so arranged that the line through the centre of the dial and the required correction from the bisection of VI and XII points to the true north on the map. Then revolve the board until the VI and XII on the dial are in the shadow of the pin and the map is set.

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No.			lbs.	lbs.	lbs.	lbs.
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	Elevating gear, etc.					
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Water puckal and chagals, etc.

The Political Officer requiring the guns to accompany him on tour would easily arrange for 27 first class riding camels. Selected camels could be bought through the political authorities for about Rs. 180 each; total Rs. 4,860.

It would then only be necessary to indent on one of the native mountain batteries for the personnel required, who would bring with them only such articles of their ordinary kit as might be settled in working out details of the scheme. Officers commanding native mountain batteries would probably welcome a plan which would only involve the withdrawal of 21 of their men, instead of one-third of their battery, during the whole of the drill season. The British officer in command would take his party to Quetta, take over guns, stores and camels, and be ready to start in about two days' time. It would not be necessary to teach any special drill, recognizing the fact that it would never be necessary to hurry into action.

The ideal political escort in Baluchistan and its borders would be—

2 mountain guns on 27 riding camels;

150 native infantry on 75 riding camels, carrying their own light baggage.

Their supplies with an infantry escort of 50 rifles could follow by easy stages, catching up the Political Officer during halts, and while country one or two days' marches to right or left was being visited by the flying column, sick men would be sent to the supply column.

An escort like this would cover more ground in two months than an ordinary escort could do in four months, and the valuable time would be saved of all concerned; to say nothing of its economy in the long run.

It is estimated that on a one month's tour a saving on the following items would be made by using riding camels:—

	Rs.
On issue of free field service kits to 70 fighting men, one follower	2,132
Field service rations of 70 fighting men and one follower	426
On fodder issued to animals allowing a camel 30 lbs. per day and cost four annas per maund ...	75
On grain allowing a camel 14 lbs. per day, and price crushed grain Rs. 2 per maund ...	77
Difference between hire of 21 and 43 baggage camels at Rs. 15 per month	330
Hire of camels to carry difference of 10 more days' supply (20 days carried above)	105
Difference between cost of return special troop train Hasan Abdal-Quetta (as guns are always detailed from Abbottabad) and return Railway Warrant for one officer 23 men Hasan Abdal-Quetta	10,000

There would besides be saving on wear and tear of expensive kit of one-third mountain battery as against wear and tear of smaller amount of kit with camels.

Deterioration of value of 27 riding camels (which would be sold again at the end of the tour) would be less than the deterioration of 88 high priced mules.

The pay of three good Baluchi camel sarwans would not be more than Rs. 45 per month.

The initial cost of the special kit required for the camel corps would probably be more than covered by the saving effected on one single tour and would be mostly non-recurring.

It is said against a camel corps in Baluchistan that the animals do not keep fit, and casualties are very great. I have used riding camels in many parts of Baluchistan over long distances, and apparently the secret of keeping them fit is to have camelmen of the country in charge of the animals, and to give the camels about 12 pounds of suitable grain per day.

NOTE.

I have perused the above letter regarding the carriage of mountain battery guns on riding camels and I am of opinion that the scheme is both practicable and likely to prove of great use if adopted. Whenever it is necessary to send an escort of troops with a Political Officer in Western Baluchistan (Jhalawan, Mekran, Kharan, etc.) it must, speaking generally, be necessary to send guns also. For such escorts are intended not for defensive purposes only. They may frequently have to take active steps for the punishment of disobedient Chiefs and others and as the whole country is full of petty forts, a purely cavalry or infantry escort might find itself confronted with a task which, if feasible at all, could probably only be accomplished at considerable cost. On the other hand the very presence of guns would, in most cases, have the effect of entirely preventing any attempt at open resistance; and one or more carried in the simple mobile way described by Lieutenant Orton would add greatly to the usefulness of the escort and probably also to the political results obtained during the tour. Guns with their ordinary establishment of mules, drivers, fighting-men, etc., are not required, while the difficulty attending the rationing of such a party and the comparatively slow rate at which they travel might often render it necessary to despatch an escort unattended by artillery notwithstanding the inconvenience that might in consequence be entailed.

MEKRAN; }
12th January 1902. }

H. L. SHOWERS, *Lieut.-Col.*,

Political Agent, Kalat.

SOME FOREIGN ARTICLES OF SPECIAL INTEREST.

BY CAPTAIN J. M. HOME, 2-2ND GURKHAS.

VOIENNYI SBORNIK.

MAY 1902.

The general staff, its foundation and development.

Purely a historical resumé, comes to the conclusion that the only people who had any organisation for war in the modern acceptation of the word up to the end of the middle ages were the Tartar Mogul invaders of Europe. As time went on, in Germany, and in France under Louis XIV, some attempt was made to have some sort of permanent officials, and though nothing was really done, a step was made in the right direction by recognising the necessity of having joint organization. However, the real founder of a staff, as understood in the present day, was Gustavus Adolphus and it was owing to his having an organised army that his successes in the 30 year war were due. The Swedish army was run by a military college consisting of a president called the State marshal, two State counsellors, four military assessors and several secretaries, which is apparently the first example in modern times of any sort of general staff.

The German Infantry, its education and instruction.

The author draws the conclusion that the keynote of instruction is the development of individual intelligence, and careful study of details. Parade movements are most carefully taught as an aid to discipline; there is no standard form of attack, each unit commander inventing his own according to circumstances. Several examples of formations for attack of the company, and battalion are given, also the method of carrying out an inspection of a company. The author does not treat of larger bodies than a battalion.

The training of the cavalry soldier.

The author lays the greatest stress on the development of the individual's intelligence; cannot condemn the manege and barrack square too strongly; these should be only resorted to when weather is too bad to go out into the open country. War takes place in the open country, across all sorts of obstacles, therefore in training the soldier for war he ought to be practised across country; it accustoms rider and mount to work independently and makes the horse clever, if all instruction takes place on level open ground in war-time the soldier instead of looking out for the enemy is fully engaged in looking after his horse. Hence every day spent in the riding school or on the square is a day lost.

The organisation and special instruction of railway troops.

There are five battalions of railway troops in Russia, three battalions in the railway brigade whose instruction is mainly theoretical, two on the Trans-Caspian railway whose instruction is mainly practical. The author defines the duties of railway troops as (a) seizing and working of railways in an enemy's country; (b) the construction and repair of railways for movements and supply of your own army; (c) the destruction of railways useful to enemy. He complains that though the Trans-Caspian battalions get lots of practise in construction, they get but little in working.

The article is mainly an account of the plan adopted for employment of the Trans-Caspian railway battalions on that railway.

JUNE 1902.

Continuation of above article.

The author proceeds to work out the idea that the railway battalions should get more practice in general working of a railway and should not be used only for the coolie part of the laying of the line. He shows what the duties of railway troops are in war and how little beyond shooting is required in the way of military training, hence the officers have more time for technical work. He gives tables showing how one battalion might take over the complete working of 200 versts of line, running 12 trains a day at 250 versts per hour. Recommends a battalion should consist of 37 officers and 1,200 rank and file divided into four companies.

To train personnel and not to cause stoppage when mobilisation is ordered suggests that a battalion should be employed as $\frac{1}{4}$ of the personnel of 800 versts of line, and that all chiefs of stations, etc., or their assistants should be soldiers, to give them training and to save a stoppage of work on mobilisation as there would always be one man left *au fait* with the work.

Letters of an ex-cavalryman I.

These purport to be letters by an officer retired in 1885 who has just spent a year in St. Petersburg and has been frequenting his old and other regiments.

He notices cavalry vastly improved, that officers are much keener, demand and get more out of the men.

He thinks the horses are inferior to what they were. The absence of any regulations regarding the training of recruits results in there being several systems; thinks they should invariably be trained by the squadron commander or best officer in the regiment, so that uniform system might prevail. The system of equitation is not all that can be desired; considers a great deal more attention should be paid to rapid mounting and dismounting in heavy marching order.

Letter II.

More care should be paid to fitting bits and there should be many more sizes than at present is the case; discusses the curb chain, and shows that the theory of the curb is not understood in the Russian

service. Some criticisms on the type of saddle and its fitting; prefers one girth to two.

The letter concludes with some remarks on sword play and decries the lance in favor of the sword, which should be made better for thrusting, for at present it is only suitable for cutting.

Militär Wochenblatt, 28th May 1902.

In an article on the Infantry attack, the author divides the attack into two parts up to 800 yards from the position, and from thence to the position. He assumes that the advance up to 800 yards will present no difficulties, but from thence on it will be very slow. No standard form of attack can possibly be advocated; the great consideration is the establishment of a superiority of fire; the timing of the actual assault must be judged from the firing line. Guns can never be really silenced, and the attack must always expect them to open again; if, however, the attack acts in real war as it does in peace, and assumes when the hostile guns are silenced that the enemy are demoralised and advances in close order with colors flying and drums beating there will be a most awful awakening. The author winds up with the advice to banish all standard forms of attack, and such words as demoralisation from our minds and from our drill-books.

A resumé of the new term of enlistment in the French Army is given which are as under:—

1. Service to be for two years.
2. No exemptions.
3. Families losing the bread-winner to get money assistance from State.
4. Liability to be called out for service is put off to age of 25 to enable students, etc., to finish their studies.
5. All who are unfit for the field army to serve in the auxiliary services.
6. Service in the reserve of active army raised to 11 years.
7. The service year to be from 1st October to 30th September.
8. A maximum of 14 days' leave per annum allowed.
9. Re-engagement to be facilitated; this to apply to privates as well as to non-commissioned officers.
10. Algiers to be brought under same rules as France.
11. Men who re-engage are to be given civil posts when their extended period of service has expired.

General André, the War Minister, thinks if the above rules are carried out and everybody serves two years instead of 31 months, 21 months, and 10 months, as is the case at present for nominal 3, 2 and 1 year men, there will be not so much difficulty in keeping up the numbers. But that owing to the decreasing birth-rate quality must be more and more sought for.

The following are the principal manœuvres in Russia this year:—

St. Petersburg district, middle July, 76 battalions, 50 squadrons and 43 batteries.

Vilna, beginning September, 64 battalions, 31 squadrons and 33 batteries, to be followed by cavalry manœuvres of two cavalry divisions.

Warsaw, 2nd week in September, 139½ battalions 125 squadrons and 462 guns, to be followed by cavalry manœuvres of four cavalry divisions.

Moscow (Imperial manœuvres, date not fixed), 154½ battalions, 62 squadrons and 82 batteries.

Turkestan, 12 battalions, 7 squadrons and 5 batteries.

Besides these there are to be many smaller manœuvres; it is calculated that $\frac{3}{4}$ of the whole Russian army will attend manœuvres. The total cost of the manœuvres excluding those at Moscow is to be £282,000.

Militär Wochenblatt of 31st May.

The Austrian military budget shews an increase of 5·8 million crowns for the army and 2·25 for the navy.

The infantry are increased by a battalion and every cavalry regiment is to get a few extra horses.

It is in the artillery, however, that the great increase takes place.

Fourteen brigade divisions of howitzers are to be added, each division of three batteries of 6 guns each.

One mountain Artillery Brigade Division to expand to two in war.

Two batteries narrow track-guns to expand to four in war.

A new artillery school also is to be started to meet the demands caused by the above new formation, which means an addition of over 400 officers, and 6,000 men with 312 guns.

All these new formations are to be started by 1st October 1902.

There are some other small increases in pioneers, train and field railway cadres.

The new guns are to be paid for by a specially raised loan.

Militär Wochenblatt of 4th June.

This contains an interesting article on protection of railways in time of war, which is especially interesting in connection with German criticism of British methods in South Africa.

The author claims that the best way of protecting railways in an enemy's country is through the inhabitants themselves. He explains the system adopted by the Germans in France in 1870-71, which consisted in threatening the villagers along the line with transportation and instantaneous destruction of their villages if the line were damaged.

He recommends a series of railway watchers selected from men of position and property from every parish who should be responsible with their lives and property for the line during this tour of duty: further that every engine drawing a troop or supply train should have on it as a passenger some prominent inhabitant, such as the mayor or village clergyman. In this manner by terrorizing the inhabitants they will have the greatest self-interest in protecting the line.

The following are the author's recommendations for employment of troops for protection of railways:—

Protect all tunnels, bridges, etc., the destruction of which would interrupt traffic for any length of time: for this purpose special bodies should be detailed who must not omit to fortify themselves. Blockhouses with wire entanglements connected with head-quarters by telephone or wireless telegraphy are recommended. Blockhouses should be capable of holding out against an enemy without artillery until reinforcements arrive.

Standing patrols of 4 to 6 men stationed at the various linesmen's huts are recommended, to work in conjunction with linesmen and stationmasters. A note of warning is raised against large guards in stations, with patrols between stations, as in time the patrols go out at fixed times which soon get known, and the enemy waits till the patrols have passed and then proceed to destroy the line.

One battalion should be able to guard 60 kilometres or roughly 40 miles, with some cavalry and bicyclists, with central reserves here and there if there are many sections of 40 miles; if the enemy is active a battalion will not be sufficient. The battalion to be disposed as follows: one company to every 10 kilometres and two companies in reserve; one-third of the company on duty, the remainder in reserve; all the various groups should be linked up by telephones or telegraph and constant patrolling should be carried out not only along the line, but in the neighbouring villages.

What would the European press have said if we had carried out the above suggestions and protected the railways in South Africa by a system of terrorizing the adjoining hamlets? The whole of Europe was pouring out invective against us, because we burnt some 600 farms for abuse of the white flag and other acts contrary to the customs of war, and yet this number of farms might easily be contained in a couple of populous French villages.

The numbers required for the protection of the line, a battalion for every 40 miles with central reserves and more if the enemy is

enterprising are instructive, for from this basis of calculation we would have required at least 100,000 men to guard the railways in South Africa, half our available force if sick are deducted, without counting garrisons in important towns, etc., and yet these very Germans were holding us up to ridicule because we could not finish the war with the force we had in the country.

In this number there is a review of a book on polo and the author waxes enthusiastic over it and claims that polo, tennis and all forms of open air sport are an excellent training for any officer, and strongly advises his countrymen to take to them.

Militär Wochenblatt of 7th June.

In an article on the cost of the Boer war, the following statistics are interesting. The British soldier in South Africa cost 17 shillings per diem, the German in China 14 shillings and in France during the Franco-German war only 5 shillings.

The new organisation of the Russian field artillery is to retain batteries of 8 guns as before, commanded by lieutenant-colonels, three or four batteries to a regiment, two regiments to a brigade and two brigades, or four regiments to an army corps. The regimental commander to be a colonel and the brigade commander a major-general. All the commissariat and equipping arrangements which formerly were in the hands of the battery commander are now entrusted to the regimental commander, with the result that battery commanding officers are very discontented.

Militär Wochenblatt of 18th June.

Contains an article from the pen of General von Boguslawski on a national *versus* a mercenary army, which is continued in the issue of 21st June.

The author begins by tracing the development of armies from the *levy-en masse* of savage races through the later Roman period and feudal ages to the middle ages or time of real mercenary armies. Louis XII and Gustavus Adolphus started standing armies and it was the latter who turned the wild land *knechts* of the middle ages into the regular armies as understood nowadays.

The author does not approve of the term "mercenary," but considers "enlisted" a better term to use for those armies maintained by countries who do not have universal service.

En passant he animadverts strongly against the aspersions made in the German press against the British Army, and says that Germans of all people who are so touchy about the honor of their army should avoid insulting an army which has an honourable past and has often fought shoulder to shoulder with their own troops in many a tight corner.

In the 18th century there were many foreign mercenaries in the standing army of that time, owing to the loss of military spirit in the population, and those who were enlisted were generally the dregs and the army lost prestige. In 1752 there were 44,000 foreigners in the French Army out of 164,000.

A national army instills habits of discipline in the population, and you get educated men in the ranks. The enormous modern armies or nations in arms have not yet been tried, the army of Frederick the Great fought just as well as that of William 1st in 1870 and yet the former was what would now be called by the German press a mercenary army.

An enlisted army must have more deserters than an army maintained by universal service.

Militär Wochenblatt of 25th June.

The frontal attack over an open plain ; the author is of opinion that the South African war has shewn that thick attacking lines and long rushes are impossible ; lines must be thin and rushes short, made by very small groups or even by individual men creeping and crawling forward. This must be practised in peace and individual initiative fostered in every way. The Germans must adopt short rushes by small groups and individual men or remain behind other armies in training.

The army of Morocco consists of regular and irregular cavalry, artillery and infantry. There are probably 12,000 regular infantry, 3 to 4,000 regular and between 30 and 40,000 irregular cavalry, 1,500 field and 800 garrison artillery. The guns are quite useless and badly kept ; they and the small arms are of all sorts, kinds and descriptions. As an army for regular work in the field it is useless, but for guerilla warfare it is excellent, and any power should be careful how it tried to annex the country.

Militär Wochenblatt of 28th June.

Gives details of the Russian Imperial manœuvres in the neighbourhood of Moscow. A Moscow army of 40,000 men and 192 guns occupying Kursk under the Grand Duke Serge opposes a southern army of 48,000 men and 216 guns under Kuropatkin two days' march distant. Only a general idea is to be issued and the two commanders are to have a free hand. The manœuvres will probably last ten days : telegraphs, telephones, balloons, wire for obstacles, automobiles, traction engines and all the latest appliances will be used.

Militär Wochenblatt of 2nd July.

Gives a resumé of the new musketry training regulations in the Russian Army.

In future General Officers Commanding will be responsible for musketry training and inspection on the rifle range. The specially appointed musketry inspecting generals will inspect shooting at unknown ranges, and as heretofore have control of rifles, ammunition, etc. It is expected that a higher classification standard will be introduced.

In this issue there is an article on strong *versus* weak advance guards. The arguments against strong advance guards are summed up as under. The commander can commit the general-in-chief to action against his wish. That strong advance guards lengthen out a column ; that a weak advance guard can make an enemy disclose his position just as effectively as a strong one. Against these objections it may be urged that no properly trained leader will commit the general-in-chief ; that the lengthening of the column can be avoided by marching on a broader front, and that if the enemy is in a prepared position, nothing but an attack in force pushed home and supported by artillery can force him to disclose his position. On the other hand, if the advance guard is weak, it will not be sufficiently strong to clear obstruction, to mend bridges, etc., so as to enable the main body to advance without halting ; that a small hostile force can compel it to halt and thus delay advance of the main body ; that the head of the main body will have to deploy under effective fire ; that the main body may have to deploy sooner than it would have otherwise done ; and that the advance guard may be driven in before the main body has had time to deploy. The author in view of these arguments is unreservedly in favour of strong advance guards.

Militär Wochenblatt of 5th July.

Contains a German translation of a French criticism of the last great manœuvres. The following are the principal points touched on. Broader march formation and more columns should be employed ; tents might be done away with as troops can invariably be billeted ; frontal attacks as opposed to enveloping tactics are recommended, and great satisfaction is evinced that French generals do not follow German ideas in this respect ; night attacks are condemned. Infantry quite rightly advance in lines, but go too quickly and do not await their reserves, who keep too long in columns and don't deploy soon enough.

Volleys are sometimes better than independent fire ; the French infantry seem to have forgotten how to make use of accidents of ground. The helmet and the sac tyrolien are recommended in place of the kepi and pack ; the entrenching tool should be carried on the hip and not on the pack.

As to cavalry they do not work sufficiently in conjunction with the other arms ; they spare their horses too much ; officers' patrols are too liberally employed with the result that non-commissioned officers become troop leaders. Artillery seem to think that as soon as they have finished their practice they have nothing more to learn at manœuvre, and confine themselves to making a noise ; they are cautioned against using too much ammunition at the commencement of an action.

Engineers must always be ready to fortify a position taken from an enemy.

Cyclists should be used as orderlies, or if as a fighting unit as an infantry support to cavalry. Staff does too much writing and takes too long getting out orders.

Militär Wochenblatt of 12th July.

Dr. Goldbeck, Veterinary Surgeon, has an article showing how even in East and West Prussia the breeding of heavy cart-horses is

on the increase in Germany owing to the development of tillage and to the consequent demand for heavy horses for the plough. He strikes a note of alarm and says the military remount will fall off if the State does not make it worth the small breeders' while to breed suitable remounts. It is cheaper and easier to breed clydesdales, etc., to blood horses, consequently the small breeder must be encouraged by the State, as the wealth of horses in any country depends not so much on the comparatively few large studs but upon the number of small breeders.

Internationale Revue über die gesamten Armeen und Flotten for June 1902 contains the following information of general interest.

New German battle ships are to have only four torpedo tubes instead of six.

There is a proposal in France to reduce the number of fortresses as at present 600,000 men are required for their garrison, and some French military experts think this number cannot be spared from the field troops, where they would be much more usefully employed than locked immobile in fortresses.

There is an increase of 90,000,000 roubles in the Russian military estimate. Details are given of the reorganisation of the fortress artillery and certain new fortress formation, the result of which is that there will be in future 7 balloon, 8 mining and 7 telegraph sections.

In a comparison of the French, Russian, Japanese and British fleets in the Far East, shows that Japan and Russia are about equal, both of their fleets being greater than Britain's, whilst the French is a bad last. British and Japanese combined fleets are easily superior to those of France and Russia. On the other hand, the British and Japanese fleets are now there, whilst the French and Russian ships have not yet all arrived.

In the supplement to their number, there is an article on the Baghdad railway; the author assumes it will be strategically disadvantageous to Britain, if—and on this hangs the whole argument,—a foreign power gets command of the Persian Gulf and if Russia annexes up to Kerman, and links that town by rail with her Trans-Caspian line.

Internationale Revue über die gesamten Armeen und Flotten for July contains the following information which may be of general interest. French Army manœuvres will be held by 16 and 17 corps and 2 cavalry brigades.

The 11th and 18th corps will have landing manœuvres in combination with the fleet.

In all other corps there will be either brigade or division manœuvres.

In addition there will be big cavalry manœuvres and fortress manœuvres at Chalons.

Cavalry manœuvres will last 20, divisional 14 and brigade 12 days.

By the end of 1904 France will have 65 sub-marine boats and in 1906, 80.

The French fleet in the Atlantic is to be reorganised as under :—

- (1) A northern fleet based on Brest of 6 battleships, 6 armoured cruisers and 6 torpedo boats, of which the cruisers only may leave French waters cruising to Dakar in Senegambia and Fort de France in Martinique.
- (2) Atlantic division, 3 protected cruisers.
- (3) Newfoundland division, 1 cruiser, 1 despatch boat.
- (4) West African station, 2 despatch boats.

Germany.—New regulations have been introduced for inspection of horses, so that the military authorities may know where to put their hands on them in case of war. Special inspecting officers are appointed who must inspect at least once in 18 months all horses, with very few exceptions, in their districts. All owners, except exempted ones, must muster their horses when required.

German torpedo-boats are to be painted a brown grey instead of black as at present.

Italy reorganises her Alpine troops, and her African troops.

There are sufficient men on the admiralty lists to man all Italian ships and coast defences, with a balance of over 50,000 men who have been handed over to the War Minister.

Japan between 1904 and 1910 will add 4 battleships of 15,000 tons, 2 armoured cruisers of 9,900 tons, 4 second class cruisers of 5,000 tons, 15 torpedo-boat destroyers and 50 torpedo-boats to her navy.

Russia.—In 1901 1,139,151 men were available for the year's contingent, of whom 306,939 were taken as recruits.

The re-armament of the Russian artillery with quick-firers has led to much controversy as to size of batteries : this has been got over by leaving them as before of 8 guns under a lieutenant-colonel, but each battery is divided into two half batteries of four guns each, under a captain, so that a battery is a sort of small brigade division.

A decree has been issued prohibiting the exportation of horses from certain southern provinces.

All reservists of European Russia and the Caucasus, belonging to infantry, field and fortress artillery of the years 1892 and 1897 are to be called to the colours this year for periods of training extending over 28, 21 and 14 days according to the time they originally served.

Turkey is going to fortify several strategical points at the northern end of the Persian Gulf ; it is noteworthy however that the forts east and west of Koweit though armed by the Turkish Government, are to be manned by the Sheikh of Koweit.

The *French* supplement contains an article on the fortifications of Switzerland.

Three courses were open to the Swiss :

- (1) Cover the frontier with forts d'arrêt and places d'armes.
- (2) Construct forts d'arrêt to cover the mobilisation.
- (3) Leave the frontier open, but block the lines of communication where they meet.

The first two were rejected as too dear and requiring too many men, and it was decided to select some spot blocking communication and forming a central place d'armes. The St. Gothard position was selected as being an important junction of roads and lending itself to the purpose of a place d'armes. A series of fortifications were constructed at Furka, Oberalp, Airolo, St. Gothard and Andermatt: these positions block all roads and cover a considerable interior space for a place d'armes.

In addition, the valley of the Rhone, the highroad for a French advance into Italy, is blocked by a series of fortifications in neighbourhood of St. Maurice and Martigny.

The *German* supplement of the July number contains an article on the French Army of today.

The French Army has no supreme head beyond the War Minister, who is constantly changing, entailing a constant change in administration: there have been no less than 30 different War Ministers since 1871.

The difficulties of army organisation have been increased by a decrease in the birth-rate in France with a corresponding increase in Germany: 50 years ago the respective populations were 35 millions; now Germany has 58 millions to France's 38½ millions, and yet France must have equal number with Germany. In 1898 there were 140,000 fewer trained men in Germany than in France and it was meant to have decreased this by 14,000 a year, but the population question being to the advantage of Germany this difference is being decreased much more rapidly; as a matter of fact the French have been compelled to reduce their peace strengths so as to be able to keep the number of units as before.

The army is divided into 19 corps in France and 1 in Algiers, and consist of active army with its reserves and the territorial army with its reserves.

The organisation is 145 active regiments, each of 3 battalions, 145 active reserve battalions each of 3 battalions and the same with the territorial army, which gives a total of 1,740 battalions.

A mobilised army corps consists of from 36 to 38,000 infantry, 1,200 cavalry and 80 to 84 guns. In case of mobilisation 5 armies are to be formed, 4 on the eastern frontier and 1 in the Alps. A mobilised company consists of 250, a squadron of 160 and a battery of 180—190 men. The French officer is recruited (a) from St Cyr and the Ecole Polytechnique and (b) by promotions from the ranks: the former are known as "Écoliers" and the latter as "Sortis du rang."

In the cavalry and infantry about one half the officers come from the ranks, whereas in the engineers and artillery only one quarter to one-fifth are recruited from "sortis du rang."

The rankers seldom rise above captain. In 1901 132 écoliers were promoted majors and only 18 sortis du rang, and amongst those promoted colonels only 2 were rankers, whereas there were 122 from the schools.

The Revue du Cercle Militaire of 31st May 1902.—In this number commences a series of articles on a 'War Fleet.' According to the author a fleet is divided into three parts: (a) the battle fleet, (b) a coast defence fleet, and (c) a colonial service fleet; he considers the essentials of each class and gives examples. The first article winds up with the cost per head of population of the chief navies of Europe as under:—

England	...	...	...	15'50
France	...	...	...	7'20
Italy	...	...	...	3'30
Germany	...	...	...	2'40
Russia	...	...	...	1'60
Austria	...	...	...	·80

In the issue of 7th June the article is continued. The author treats of reconnaissance, the duty of cruisers, service of security, the duty of torpedo-boats and destroyers when the fleet is moving; when it is at anchor reliance must be placed in booms and patrolling.

The special tactics to be employed by torpedo-boats are treated of; the author is of opinion that torpedo-boats to be of real use must be fast, invisible and good sea boats; that their best chance of being successful is to act by surprise; hence their proper time for acting is by night; by day the author prefers the submarine.

The conclusion the author draws with reference to the combat of large ships, cruisers and battleships is that that side will win which can turn and manœuvre best and that can reload its big guns the quickest.

The actual battle between two fleets will consist of skirmishing between the hostile cruisers until the battleships draw near, when the cruisers will draw off, the two battleship squadrons will approach in column, and whilst approaching keep up as heavy a fire as possible from the largest number of medium guns that can be brought to bear. Whilst the two fleets are approaching the torpedo-boats will keep under cover of the battleships, darting to the attack when the fleets are fairly close.

The issue of 30th June 1902 completes the article with considerations as to system of recruiting obtaining in Europe and other matters.

In France the navy is recruited by the so-called 'Inscription maritime,' by which all men living on the French coasts are liable to serve for five years, commencing at 20 years of age; all those who are not actually serving are divided into eight classes: the first three can be called out by a ministerial decree, the last five only in event of mobilisation. There are 120,000 men on the list, so ample are available. In addition to the above, several thousands are taken from the interior of the country for special work, such as mechanics, etc.

In Germany the same law governs the recruiting for the navy as for the army: $\frac{2}{3}$ are taken from the maritime population and $\frac{1}{3}$ from the iron workers and miners of Saxony and Westphalia. As the men only serve three years, the result is that as soon as they are trained they go to the reserve. In Austria and Russia practically the same system obtains as in Germany.

In Italy all men living on the coasts are liable to serve: after serving for four years, they go to the reserve, and are divided into four classes (up to age of 39), any or all of which classes can be called up by ministerial decree. The personnel kept up in peace is sufficient to man all ships for war. In a comparison of the naval strength of different powers, numbers show nothing; the factors to be considered are the class of armor, number and weight of guns, and coaling stations connected by cable spread all over the world; it is these latter that make the great naval strength of England.

In 1917 the German Navy will be ahead of that of France, who cannot look for help from Russia, as (1) Russia's best ships are in the Pacific; (2) Russia's fleet in home waters is divided and cannot hope to concentrate; (3) the rate of construction in Russia is so slow that her fleet is not a homogeneous one.

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The independent cavalry should march by bounds, the general plan being that, under cover of the screen established on the previous day by cavalry, the infantry should march and when it has made its day's march and put out its outposts, the cavalry should march forward, with patrols out and some formed body to act as main body to break down any resistance encountered, and should establish itself in front of the army, which again next day would march up to cavalry screen, when cavalry would again advance and so on. Corps cavalry should consist of at least two squadrons, its duty is to form the point of the advance guard, to keep the general in touch with what is going on, to protect the flanks on the march and in a town and to form an escort for the general when going to the front to reconnoitre. Divisional cavalry should consist of at least a full squadron, its duties are analogous to those of corps cavalry, and it must always be on the alert, as should the corps cavalry, during battles on the march. Divisional and corps cavalry should always be on the watch to stop small hostile patrols which have evaded the advanced screen, what they will always be able to do.

Independent cavalry and advance guard should be considered as a whole; the distinction between the independent cavalry, advance guard and main body will decrease as the enemy is approached.

Cavalry should remember that its first duty is reconnaissance and its second duty the protection of the army corps or division to which it is attached. It must avoid being drawn into fights, especially divisional cavalry, as owing to its numerical strength one man is a serious loss, 30 out of action cripple it and 60 render it useless.

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The Revue du Cercle Militaire of 31st May 1902.—In this number commences a series of articles on a 'War Fleet.' According to the author a fleet is divided into three parts: (a) the battle fleet, (b) a coast defence fleet, and (c) a colonial service fleet; he considers the essentials of each class and gives examples. The first article winds up with the cost per head of population of the chief navies of Europe as under:—

England	...	...	...	15'50
France	...	...	...	7'20
Italy	...	...	...	3'30
Germany	...	...	...	2'40
Russia	...	...	...	1'60
Austria	...	...	...	1'80

In the issue of 7th June the article is continued. The author treats of reconnaissance, the duty of cruisers, service of security, the duty of torpedo-boats and destroyers when the fleet is moving; when it is at anchor reliance must be placed in booms and patrolling.

The special tactics to be employed by torpedo-boats are treated of; the author is of opinion that torpedo-boats to be of real use must be fast, invisible and good sea boats; that their best chance of being successful is to act by surprise; hence their proper time for acting is by night; by day the author prefers the submarine.

The conclusion the author draws with reference to the combat of large ships, cruisers and battleships is that that side will win which can turn and manœuvre best and that can reload its big guns the quickest.

The actual battle between two fleets will consist of skirmishing between the hostile cruisers until the battleships draw near, when the cruisers will draw off, the two battleship squadrons will approach in column, and whilst approaching keep up as heavy a fire as possible from the largest number of medium guns that can be brought to bear. Whilst the two fleets are approaching the torpedo-boats will keep under cover of the battleships, darting to the attack when the fleets are fairly close.

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Revue du Cercle Militaire of 21st June.—A translation of an article by the Russian General Lenevitch on the Japanese manœuvres is given, of which the following are the main points.

The manœuvres were those of the 1st against the 8th division. As the General considered the tactics were quite unworthy of comment he confines himself to a description of the troops. He thought the infantry good and the cavalry bad, but was unable to see much of the artillery, or its weapon: the troops were billeted. He draws the final conclusion that the Japanese would have no chance against the Russians, as they would die from cold and exposure, as they could not be billeted in houses, and that their army would be soon frittered away as their lines of communication lengthened out. It may be asked however, why should the Japanese select winter to fight in and why should they do more than seize the important fortresses on the littoral. The Japanese hate the Russians, and a Russian war would be popular.

28th June—This issue contains an article on the decree of the 3rd June for the reorganisation of the Military Telegraph Service, which must be read, as the article itself is only a resumé.

In the *Revue du Cercle Militaire* of 5th July there is a long article on the evolution of artillery; it may be interesting to note that the first inventors of rifle cannon were an Italian and a German, that the French were the first to use them and the Germans the first to use breech-loading ordnance.

Revue de Cavalerie, May 1902—In an article on cavalry in this number, the author lays down three main principles which should guide all cavalry action:

- A.—Cavalry never works for itself but for others. Its action concerns the general situation, in that it helps the General Officer Commanding to arrive at decisions.

Corollaries:

- (1) Cavalry is the direct agent of the General-in-Chief.
- (2) Its Chief should be completely *au fait* with the general situation.

- B.—The cavalry has two rôles, reconnaissance and service of security.

Corollary:

Separate bodies should be employed for these duties.

- C.—Every separated organised unit must have information and a service of security.

Corollaries:

- (1) Every detachment must have some cavalry.
- (2) In each cavalry group, the services of security and reconnaissance must be told off to different parties.

Resumé.—Keep light cavalry for reconnoitring work and heavy for shock tactics, not more than four divisions should be used for reconnaissance. Officers' patrols are better than large patrols. For forwarding information when obtained, pigeons best of all means, if not available use orderlies: don't make the mistake that cyclists can be used for reconnaissance; their duty is in rear, to be employed as messengers and so save horseflesh.

Revue de Cavalerie, June 1902.—Can the Napoleon Cavalry serve as a model to-day? The author considers it doubtful whether any army can be sure of the various theories put forward, untried as they are by practice, and considers it well worth while to study the Napoleonic cavalry which was a most successful arm.

The following are the main points he considers deserving attention in the organization, training and action of Napoleon's Cavalry.

The Cavalry was organised in three distinct groups—light, heavy and medium, or hussar, dragoon, and cuirassier. Later Napoleon started a fourth group, *éclaireur* or scout, to do the whole of the reconnaissance pure and simple. There was a much larger proportion of cavalry in Napoleon's time than now, and the regiments were much larger *viz.*, heavy 800, medium 900 and light 1,000 sabres each. At the same time there was no fixed proportion of cavalry to the various units, division and corps, but the cavalry was told off according to circumstances, sometimes more and sometimes less, even being transferred in the middle of an action from one corps to another or from a corps to the general cavalry reserve. Cavalry was not divided into independent and divisional as is now the case, but was divided according to circumstances.

Napoleon used his cavalry as the decisive arm on the battle field, and always kept it well in hand for the decisive moment, even if necessary making it wait in column exposed to artillery fire. When once launched to the attack he expected it to charge home regardless of losses, and it always did, its motto being "to conquer or to die." In charging the light cavalry formed the first-line, the dragoon the second and the cuirassier or heavy the third line, to give the *coup de grace*. The heavy cavalry were always kept for the battle field and never used for other purposes. The duty of reconnaissance was carried out by light cavalry supported by dragoons to hold the ground till the Infantry came up. An officer entrusted with a reconnaissance was always given a definite object and told how far he was to go, no indefinite points being ever given. Napoleon always took care that his reconnoitring cavalry was stronger than the enemy's at the outset. Until he had established moral superiority, he never ran any risks, afterwards he acted most boldly.

The following is the author's idea of division and action of cavalry: he divides it into three groups—

- (a) 1st line or independent cavalry.
- (b) Corps cavalry.
- (c) Divisional cavalry.

Duties of independent cavalry. This group is the organ of the General-in-Chief and should so act as to ensure him his liberty of action and should be so far in front as to ensure his being able to concentrate on any part of his front or on his advanced guard in one day. It should obtain information regarding the movements of the enemy, and prevent the hostile cavalry obtaining information about the troops marching in rear of it.

In the case of an army consisting of four corps, one of which is employed as advance guard, and the other three following the main body, the advance guard would probably be a day's march, 15 to 20 miles, in front of the main body, in which case the independent cavalry ought to be from 6 to 10 miles in front of the advance guard and extended on a front of from 16 to 20 miles.

The independent cavalry of an army of above strength should consist of at least a division, so as to be strong enough to have some formed body on which its advanced patrols could fall back. Independent cavalry should always send in its report to the advance guard where the General-in-Chief or somebody representing him should always be found.

The independent cavalry should march by bounds, the general plan being that, under cover of the screen established on the previous day by cavalry, the infantry should march and when it has made its day's march and put out its outposts, the cavalry should march forward, with patrols out and some formed body to act as main body to break down any resistance encountered, and should establish itself in front of the army, which again next day would march up to cavalry screen, when cavalry would again advance and so on. Corps cavalry should consist of at least two full squadrons, its duties are to form the point of the advance guard, to keep the general informed of what is going on, to protect the flanks on the march and in action and to form an escort for the general when going to the front to reconnoitre. Divisional cavalry should consist of at least a full squadron, its duties are analogous to those of corps cavalry, and it must always be on the alert, as should the corps cavalry, during halts on the march. Divisional and corps cavalry should always be on the watch to stop small hostile patrols which have evaded the advanced screen, with which they will always be able to do.

Independent cavalry and advance guard should be considered as a whole; the distinctions between the independent cavalry, advance guard and main body will decrease as the enemy is approached.

Cavalry should remember that its first duty is reconnaissance and its second duty the protection of the army corps or division to which it is attached. It must avoid being drawn into fights, especially divisional cavalry, as owing to its numerical strength one man's a serious loss, 3) out of action cripple it and 6) render it useless.

Prize Essay Gold Medallists.

- 1872.....ROBERTS, Lieut.-Col. F. S., V.C., C.B., R.A.
 1873.....COLQUHOUN, Capt. J. A. S., R.A.
 1874.....COLQUHOUN, Capt. J. A. S., R.A.
 1879.....ST. JOHN, Maj. O. B. C., R.E.
 1880.....BARROW, Lieut. E. G., S.C.
 1882.....MASON, Lieut. A. H., R.E.
 1883.....COLLEN, Maj. E. H. H., S.C.
 1884.....BARROW, Capt. E. G., S.C.
 1887.....YATE, Lieut. A. C., S.C.
 1888.....MAUDE, Capt. F. N., R.E.
 YOUNG, Maj. G. F., S.C. (specially awarded a silver medal).
 1889.....DUFF, Capt. B., S.C.
 1890.....MAGUIRE, Capt. C. M., S.C.
 1891.....CARDEW, Lieut. F. G., S.C.
 1893.....BULLOCK, Maj. G. M., Devonshire Regt.
 1894.....CARTER, Capt. F. C., Northumberland Fusiliers.
 1895.....NEVILLE, Lieut.-Col. J. P. C., S.C.
 1896.....BINGLEY, Capt. A. H., S.C.
 1897.....NAPIER, Capt. G. S. F., Oxfordshire L. I.
 1898.....MULLALY, Maj. H., R.E.
 CLAY, Capt. C. H., S.C. (specially awarded a silver medal).
 1899.....NEVILLE, Col. J. P. C., S.C.
 1900.....THUILLIER, Capt. H. F., R.E.
 LUBBOCK, Capt. G., R.E. (specially awarded a silver medal).
 1901.....RANKEN, Lieut.-Col. G. P., S.C.
 1902.....TURNER, Capt. H. H. F., S.C.

MacGregor Memorial Silver Medallists.

- 1889.....BELL, Col. M. S., V.C., R.E. (specially awarded a gold medal).
- 1890YOUNGHUSBAND, Capt. F. E., K. Dn. Gds.
- 1891.....SAWYER, Maj. H. A., S.C.
RAMZAN KHAN, Havildar, 3rd Sikhs.
- 1892.....VAUGHAN, Capt. H. B., S.C. . . .
JAGGAT SINGH, Havildar, 19th P. I. . .
- 1893BOWER, Capt. H., S.C. (specially awarded a gold medal).
FAZALDAD KHAN, Dafadar, 17th B. L.
- 1894.....O'SULLIVAN, Maj. G. H. W., R.E.
MULL SINGH, Sowar, 6th B. C.
- 1895.....DAVIES, Capt. H. R., Oxfordshire L. I.
GUNGA DYAL SINGH, Havildar, 2nd Rajputs.
- 1896.....COCKERILL, Lieut. G. K., S. C.
GHULAM NABI, Private, Q. O. Corps of Guides.
- 1897.....SWAYNE, Capt. E. J. E., S. C.
SHAHZAD MIR, Dafadar, 11th B. L.
- 1898.....WALKER, Capt. H. B., Duke of Cornwall's L. I.
ADAM KHAN, Havildar, Guides Infantry.
- 1899.....DOUGLAS, Capt. J. A., S. C.
MIHR DIN, Naik, Bengal S. and M.
- 1900.....WINGATE, Capt. A. W. S., S. C.
GURDIT SINGH, Havildar, 45th Sikhs.
- 1901.....BURTON, Major E. B., S. C.
SUNDER SINGH, Colr. Havildar, 31st Burma Infantry.
- 1902.....RAY, CAPTAIN M., R.E., 7th Rajput Infantry.
TILDIR BRANDANI, HAVILDAR, 9th Cutch Rifles.



